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Contents

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★

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Random Comment on the Industrial Scene 8
The Outlook for Finishes in 1948 20
A Few Highlights on New Equipment 28
How Kaiser-Frazer Cars Are Painted 34
Finishing National Cash Registers (Part 2) 54
Product Painting in a Custom Shop 58
Theory and Practice of Furniture Finishing (Part 2) 71
Letters from Readers 82
Questions and Answers 92
Materials; Supplies; Equipment 104
Editorial 116
"Classified Advertising" Section 128
Advertisers Index 132

What's Here and Ahead in Our Industry 24
American Varnish Appoints Harry J. Abrams 26
Promotions at Detrex Corp. 26
Advance Paint Co. Expands 46
DeVilbiss School of Spray Painting Announces Classes 46
Makes Weather-Ometer Tests on Painted Products 66
W. G. Sheane Joins Staff of Zapon Divn., Atlas Powder 66
New Executive Positions Created at Zapon 88
Wyandotte Chemicals Advances Weller 88
Coast to Coast Service of Everything for Woodfinishing 90
New Book on Resins 90
Again, Force-Dried Wood Finishes 102
Austin Fletcher Joins Enthone, Inc. 102
Daniel Deroge, Sr., to Represent American Varnish Co. in Indiana 128
Increases Its Business by 47% Over 1946 128

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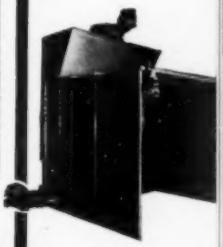
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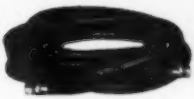
Air, Material Hose and Hose Connections

Exhaust Units for Spray Booths and Hazardous Locations

Inflation Continues. The inflationary spiral is likely to continue with higher prices for commodities, housing and other living cost items and is now beginning to affect interest rates, nationally-known economists agreed in an all-day panel discussion held in Minneapolis, Minn. last month.

There is little evidence that natural forces will stop inflation for some time, nor is there evidence that strong action will be taken to put curbs on it, in the opinion of the round table participants. But there is also general agreement that it would be tragic if drastic control were indicated which would restrict the free enterprise system which has built America to its present great strength.

The conclusions reached by the 50 members who participated in the session were that the indications are for continued high employment and reasonably high production through 1948, particularly if the Marshall Plan is put into effect. Primary factor in the situation ahead in the next few months is the inflationary spiral, which shows no sign of changing. Prices have been rising faster than consumer income but full employment, expansion of consumer credit and a backlog of savings are factors in assuring a continued demand for goods.

Labor supply is the big item in future production possibilities. In spotted sections, interest rates on mortgages and other investments are already showing an upward trend and a long-term trend in interest rates now is definitely upward, ending a 15-year move in the other direction.

* * *

Hotel Improvements. Over $100,000,000 now is being spent or will be appropriated during the next few months for kitchen and dining room equipment in the hotels of the nation, according to Charles A. Horrworth, executive vice president of the American Hotel Association.

Basing the figure on a carefully tabulated survey taken of the 5700 leading hotels across the country comprising the association's membership, Mr. Horrworth said that the industry was just emerging from a hectic 6-year period of overcrowding, coupled with lack of trained manpower and severe shortages of operating equipment, materials and supplies.

According to the AHA executive, hotels will spend over $8,000,000 on ranges and ovens; $6,000,000 on dishwashers; $15,000,000 for silverware; and over $16,000,000 for glass and chinaware; to mention but a few major items.

"The career hotel operator is determined to rehabilitate and modernize his property, maintain his traditional reputation for warm hospitality, and establish new high standards of comfort, convenience and service. He and his brother innkeepers are now engaged in such projects to the tune of one and one-half billion dollars with the aim of providing the finest hotel accommodations in the history of the world," Mr. Horrworth declared.

(Continued on page 10)

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Up-to-date for '48. Though confident of generally good business in 1948, SKF Industries, Inc., manufacturers of ball and roller bearings, faces a year in which the determination of many users of anti-friction bearings to reduce inventories and to procure materials on shorter notice will call for greater flexibility in production and overall management planning.

SKF is attempting to meet these problems by anticipating more rapid changes of production in its many types and sizes of anti-friction bearings to meet fluctuating demands. The company gained increased capacity and added flexibility during 1947 by bringing in two new plants, one for metal stamping and the second for pillow blocks. The two main plants at Philadelphia were modernized with some $2,000,000 worth of new machinery as the first part of a $4,000,000 program aimed at offsetting high operating costs with increased efficiency. This program will continue through the new year as conditions permit.

* * *

Protective Coatings. Creative research in the fields of cellulose, and rosin and terpene chemicals, has enabled Hercules Powder Co. to produce scores of important products used in the manufacture of protective coatings—nearly a billion-dollar annual business.

New and improved raw materials, based principally on cellulose and rosin, are being made available for paints, varnishes and lacquers, as a result of Hercules continual study and testing of its products.

Hercules research has produced a versatile family of cellulosics with unique properties for lacquers. In a little over a quarter century, cellulose lacquers, in the United States, have grown from practically nothing to a hundred-million dollar annual busi-

ness. Output of nitrocellulose, the oldest of cellulose chemicals, continued as high during 1947 as it was in the record year of 1946.

* * *

Automatic Factory. Although the day of the completely automatic factory is still far off, there is a marked movement in that direction and the trend will accelerate in 1948, according to Harold W. Sweatt, pres. of the Minneapolis-Honeywell Regulator Co.

This trend is particularly noticeable in the chemical and petroleum industries, Sweatt stated, where exact measurements of quantities and temperature are imperative, and where new processes, made possible by automatic controls, are being regularly developed. The basic metals, utilities, foods, textiles and ceramic industries are other fields making increased use of industrial instrumentation to lower costs and improve products, he said.

The two principal forces moving the American factory owner to full automatic operation are: 1) new industrial processes, and 2) requirements for human comfort and health, according to Sweatt.

* * *

Accidents Cost Too Much. "The American people could contribute more than six billion additional dollars a year to world relief without sacrifice of any kind—in fact with inestimable benefit to themselves—if they would make every day, not a meat-less or poultry-less day, but an accident-less day," declared Charles E. Hodges, President of American Mutual Liability Insurance Co. at a meeting of that company's New York Advisory Board held last month. Mr. Hodges pointed out that accident-free days would not only save these billions of dollars but at the same time increase production of untold tons of food, clothing, materials and other necessities essential to relief.

(Continued on page 124)

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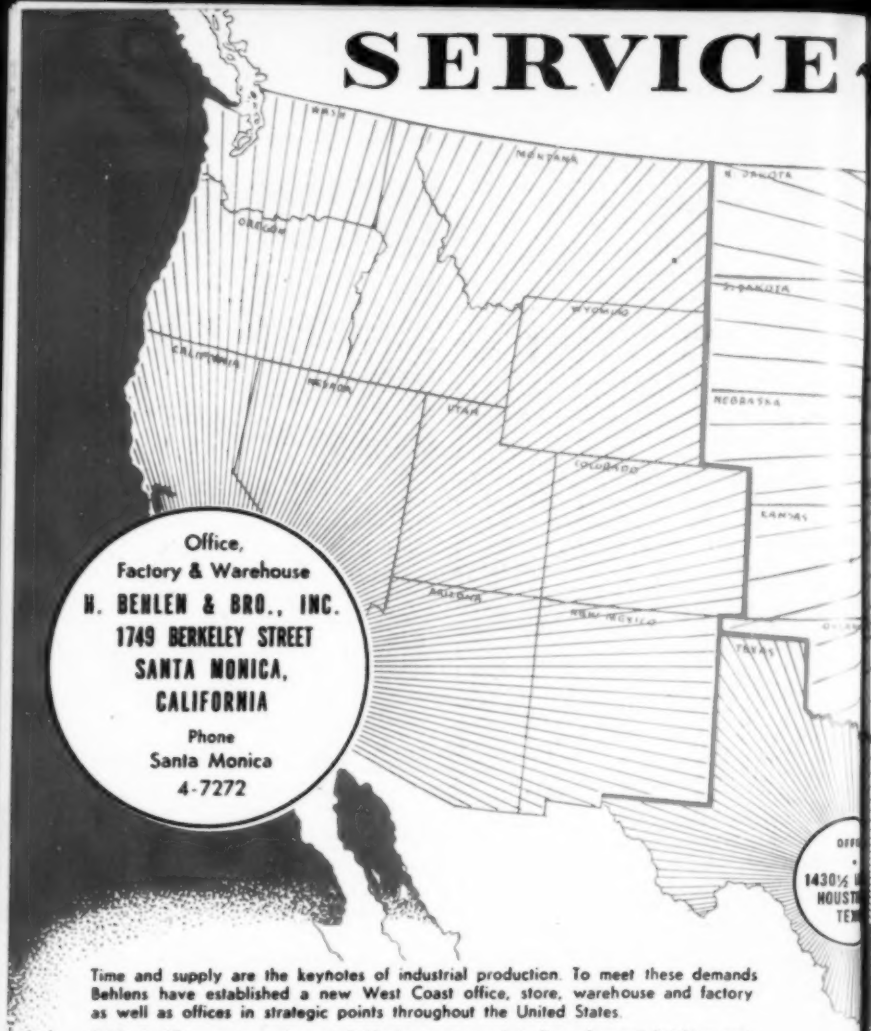

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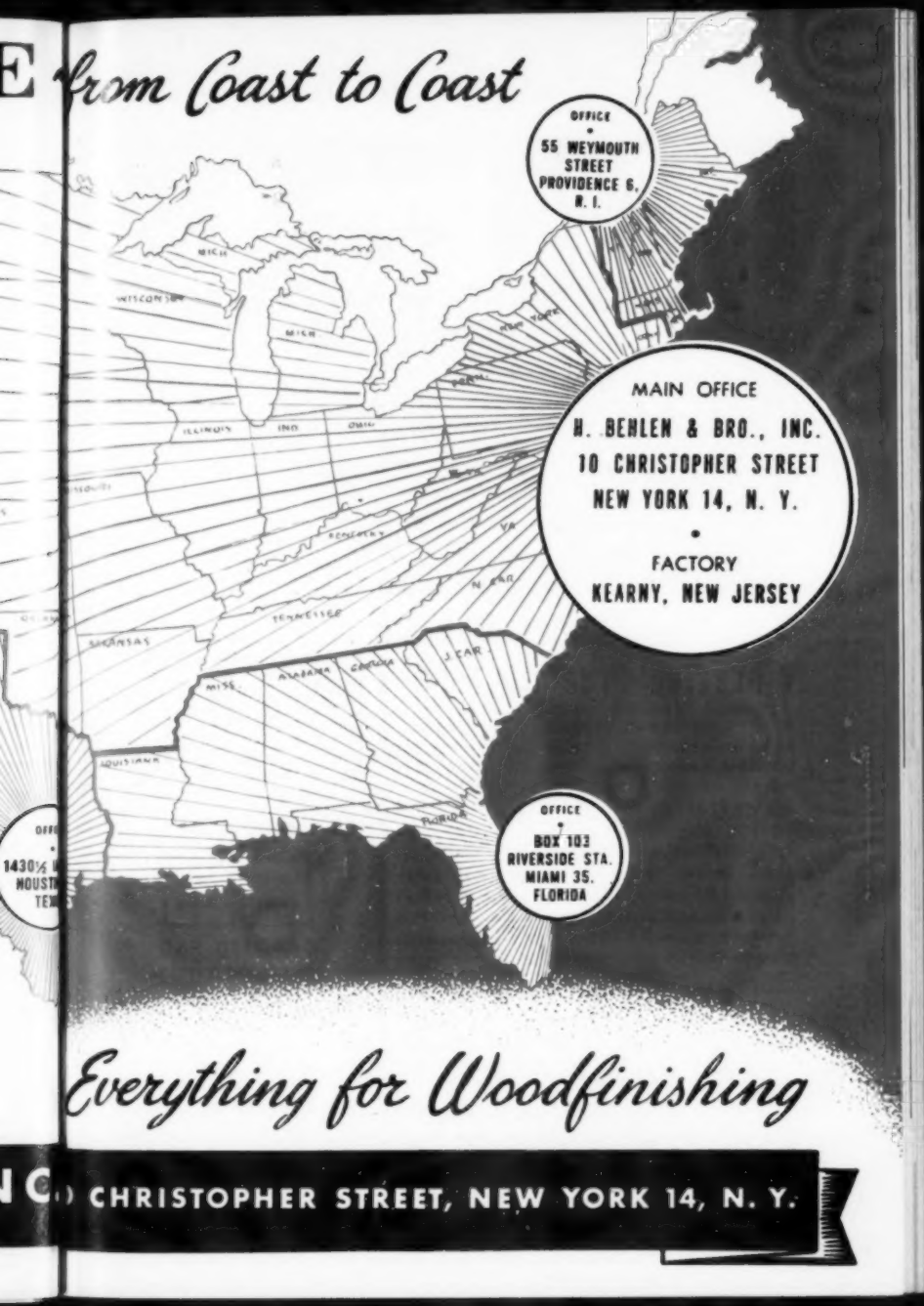
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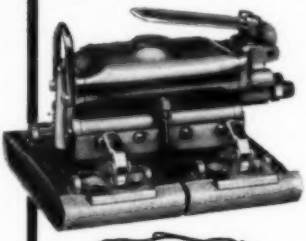

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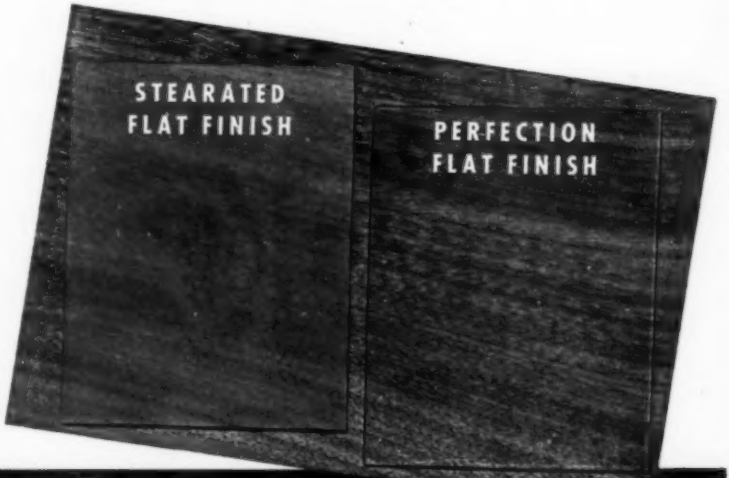

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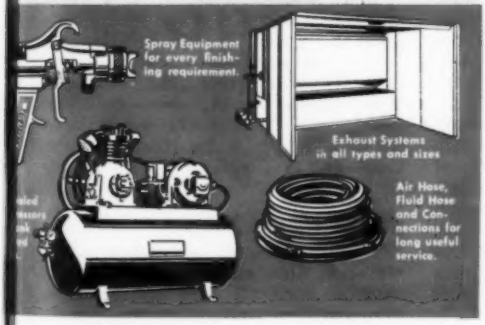
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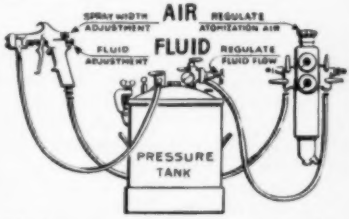
DEVILBISS HINTS . . . on *Finer Finishing*

HOW TO ADJUST YOUR SPRAY GUN

The spray gun has two adjustments, the Fluid Needle Adjustment and the Spreader Adjustment Valve. In industrial operations, using a pressure feed tank, both adjustments are opened wide at the start and used as little as possible thereafter.

The original purpose of the Fluid Needle Adjustment is to restrict the pull of the trigger and limit the flow of fluid through the gun. But this puts a tension on the trigger which tends to tire the operator in continual triggering. It also makes for excessive wear and tear on the Fluid Needle and Tip. For these reasons then, it is better not to control the flow of fluid at the gun except when doing touch-up work or when small amounts of material are used. Otherwise adjust pressure on the fluid in the tank to deliver as much fluid as needed to cover the job at the speed you want to work. The minimum fluid pressure is found by experimentation.

The purpose of the Spreader Adjustment is to control the width of the spray. The atomizing air pressure, however, is not controlled at the gun but at the air transformer. Here the least possible air pressure is set off to atomize the minimum material needed to coat the job.



Ideal spray results come from a perfect balance of air to fluid. A given flow of paint requires a given flow of air to atomize it. Raising the pressure on the fluid in the tank, for instance, means that more air is also needed to atomize the increased fluid flow. And with these higher pressures comes faster coverage and higher speed operations. Remember to start with the minimum pressures, both in fluid and in air, to save time as well as materials in balancing these two essentials.

THE OUTLOOK FOR *finishes in 1948*

By RAYMOND C. ADAMS

Technical Director
Gilman Paint and Varnish Co.

DURING THE past several years one of the important requirements of an industrial finish has been, "Can you supply?" The year 1948 will, in the main, find that requirement forgotten. The supply position is good. During 1948 there shouldn't be many users of industrial finishes suffering from quality or because they can't get what they want. It is true that the demand for some raw materials still exceeds the supply. In general, however, the supply is good and the margin between supply and demand is relatively small.

Probably the "tightest" raw material at present—and the supply of which doesn't promise to improve materially in 1948—is phthalic anhydride. Phthalic anhydride is one of the main constituents in alkyd resins. Alkyd resins are important components of many lacquers, air-drying enamels and baking enamels. Since these three types of finishes comprise the bulk of industrial finishes it is easy to see why phthalic anhydride is so important.

The consumption of alkyd resins, and thus phthalic anhydride, is far greater than in previous years. Before the war the use of alkyd resins was confined largely to industrial finishes, because they are normally applied by spraying or dipping. At that time it was impossible to use alkyd resins in brushing type paints, such as are sold through retail stores.

In recent years new types of alkyd resins have been developed that are far superior, for use in brushing type paints, than the old standby oleoresinous varnish, and they are rapidly replacing it in certain products. Industrial finishes comprise about 40% of all paints sold. Trade sale paints (the type sold through retail paint stores) comprise another 40%; maintenance paints take up the remaining 20%. Therefore this new field for alkyd resins is actually larger than its old field — a big factor in the shortage.

Titanium Dioxide in Demand as Excellent White Pigment

Titanium dioxide is the only white pigment that can be used in our modern one-coat coverage enamels. The new type Rutile titanium dioxide (the old is called Anatase) which didn't appear on the market until shortly before the war, has such improved hiding properties over the regular type that the paint industry is clamoring for it.

Let us look at facts. When one pound each, of the following white pigments is dispersed in its respective gallon of vehicle, the resulting paint will completely hide a black background of a number of square feet indicated below:

White lead	(sq. ft.)	15
Zinc oxide		20
Lithopone		27
High-strength lithopone		44
Zinc sulfide		58
Rutile titanium dioxide		135

With few exceptions, titanium type pigments are the only white pigments that can be utilized in industrial finishes. However, before the war large quantities of other types were used in trade sale and maintenance paints which, as shown above, comprise 60% of all paint sales. Believe it or not, titanium pigments also cost less money on a hiding basis, hence another reason for their unprecedented demand. The titanium pigment supply in 1948 will remain less than the demand, but users of industrial finishes should not feel the pinch. It will be the trade sale and maintenance paints that will suffer.

Oil Supply a Question Mark; Lacquers and Varnishes O. K.

The oil market is a question mark in 1948. In the paint industry, we use largely linseed, tung (China wood), castor, soya, fish, coconut and oiticica oils. These oils come from the four corners of the world. Indications are that there will be a general tightening up. Everything depends upon world conditions, which brings up subject matter beyond the scope of the author and this review. My prophesy is that industrial finishes, in 1948, will not suffer because of oil. If a shortage does develop it will be reflected in trade sale and maintenance paints which contain far more oil, in relation to their dollar sales value, than do industrial finishes.

The lacquer situation in 1947 was good. There shouldn't be any difficulty in 1948. However, no marked improvement in quality can be seen.

The quality and availability of varnishes in 1947 approached that of prewar years. Varnishes will be readily available in 1948, if oils continue to be available. If the oil situation tightens, there will be a tendency to switch to alkyd type resins which, as explained above, are already encroaching on varnishes. If anything, the quality of varnishes in 1948 should improve, largely because of improvements in the resins from which varnishes are made.

Air-Drying and Baking Synthetic Enamels

In the field of air-drying synthetic enamels, about the only improvement that can be expected is slight shortening of drying time. Alkyd resins, which are the base of most air-drying synthetics, are constantly being improved in drying qualities. A significant shortening of the drying time of alkyd resins has resulted from the use of pentaerythritol in place of glycerine. Production of pentaerythritol during 1947 was limited. We are told that by March 1948 the supply will be greater than the demand. If this is true, look for faster air-drying enamels.

Baking industrial finishes of the urea formaldehyde and melamine types, that bake out in 5 to 10 minutes at 300° to 325° F., have been readily available in 1947—as long as there was pigment to go in them. Again in 1948 pigments will be the only limiting factor, with the situation in general much improved over 1947. No improvement in quality or reduction in baking time can be seen for 1948.

What about the cost of industrial finishes in 1948? Users probably think that paint costs have already reached their peak. They haven't. Although in 1947 some raw material costs came down, and were reflected

in lower selling prices of industrial finishes, they seem at present to be started back up.

All paint is composed of three types of raw materials: 1) pigment, 2) vehicle, and 3) thinner. Recently the costs of these raw materials have all increased, particularly the vehicle. In addition, labor costs are rising. Paint selling prices will also rise. Look for a 5% to 15% increase in 1948.

Editor's Note: The following additional comment on the same subject is from Herbert H. Watjen of Sinclair & Valentine Co., New York.

Synthetic resins and organic pigments appear to be the important factors in finishes for 1948, although natural resins become available during 1947. The better resistance offered by synthetic resin to water, solvents, corrosion, and light, makes synthetic resins perferable in quality finishes.

Phenolic urea formaldehyde, melamines, and the various cellulose and polyvinyl thermoplastic resins will be used more and more in varnishes, enamels and lacquers. The use of these resins in special corrosion-resistant and solvent-resistant industrial finishes will increase as the volume of production increases.

The acute titanium dioxide shortage is expected to be relieved. The demand for this high-covering-power pigment in enamels, paints, rubber and polyvinyl plastics has resulted in a grey market, but this situation should be relieved.

Quality organic pigments are preferred to inorganic (mineral) pigments becaues of their much greater strength of color. Where 10% of an inorganic pigment is required, about ½% to 1% of a quality organic pigment will replace it. Because less pigment is required, the processing cost of grinding or ball-milling will be much less.

Although organic colors have been available, many desirable light-fast colors have been comparatively scarce. Raw material shortages on the quality organic colors are gradually being overcome so that their availability should be good in 1948. Because of the advantage of using less pigment, and of the brighter cleaner tints, hues and shades that can be obtained, these organic colors should replace the inorganic colors. Finish manufacturers are grinding these materials in solvents, plasticizers, and vehicles, in ball mills or ink mills, so as to obtain greater strength from the resulting small particle size of the pigment.

Editor's Note: Still more comment about the "Outlook for Finishes in 1948" comes from M. A. Glaser, Technical Director of Midland Industrial Finishes Co.

Despite the fact that the war has been over for more than two years, we still find ourselves in a period of raw material shortages and spiraling prices. Such vital materials at titanium dioxide, phthalic anhydride, vegetable oils, glycerine, various organic pigments, etc., are in extremely short supply. Many solvents are scarce. At this writing toluol and xylol are becoming increasingly difficult to obtain.

In 1947, as in the preceding few years, new developments were largely side-tracked in favor of substitutions to enable the paint industry to fill its extremely large volume of orders.

Some Shortages in Materials; Some Higher Prices, Too

For 1948, one can only guess. We will probaly be plagued with shortages of some materials. It is likely, however, that some of the new "post-war" developments will begin to seep out to the paint using industries. Due to the constantly rising prices for raw materials it is probable that the cost of finishing materials will be higher for 1948. *(To page 24)*

quickly solved a finishing problem!

The recent suggestions of a Lowe Brothers "Finishing Engineer" solved a manufacturer's finishing problem, and quickly improved his finishing results. This manufacturer used a lead coated steel for his product and was having great difficulty in getting proper adhesion between the primer and lead coating.

Lowe Brothers "Finishing Engineer" checked the solution being used to clean the unprimed product. While he found the method of cleaning the metal satisfactory, he realized from experience that an additional treatment was necessary to insure proper bond between metal and primer. He suggested a phosphoric acid treatment which properly etched the metal and resulted in excellent adhesion of the priming coat. This method proved less expensive than the previous method of cleaning because it was also possible to discontinue the old cleaning operation.

This experience, though unpretentious, is just another example to show that Lowe Brothers "Finishing Engineers" *do* have the experience, knowledge and willingness to help solve many of the problems which affect finishing results.

Even though you do not have a grave finishing problem, it may be well worth your while to have a Lowe Brothers "Finishing Engineer" check your finishing methods for possible improvement. You need not be a Lowe Brothers customer to benefit by this *free* service. Just write to The Lowe Brothers Co., Dayton, Ohio.

Lowe Brothers
FINISHES FOR INDUSTRY

There is evidence that paint users are becoming more quality conscious.

It might be intere ting to note a few of the new technical developments which the new year may usher in. New vinyl-base resins have been developed which exceed in compatibility any heretofore known. These resins enable the formulator to blend vinyl and alkyds, a combination which promises to be effective for many difficult formulation problems.

The silicone resins, too, will be more prominent in 1948. The advent of a low price aluminum silicone finish, which air dries or bakes and withstands extremely high temperatures, is evoking increasing interest. Besides their inherent heat resistance, silicone resin finishes give promise of being extremely weather resistant. Introductions of new chemicals have made possible the development of new and unique alkyd resins. Faster dry, hardness, flexibility, and good weathering are properties which may be expected of these materials.

Finishing Foreman, an Important Factor in Success of Finishes

The technical changes noted in the foregoing paragraphs — and many others — will make some new finishing materials available for difficult finishing jobs in 1948. We should remember, though, that it is the paint foreman or superintendent — with his many years of practical experience, his knowledge of methods and men, and his knowledge of paint materials in general — who is responsible for the successful use of many new products. Nearly every new type of finish is accompanied by a new type of finishing "headache", and it is the paint foreman and his associates who must tackle these problems courageously and solve them.

We foresee then for 1948—1) Higher quality requirements, 2) some new materials, 3) continued shortages, 4) increased prices.

Whats Here and Ahead in Our Industry

By W. R. McKenney*
The Glidden Company

THE PAINT INDUSTRY is setting the pace for industry in general. In spite of innumerable, continuing difficulties, it has forged ahead during the past year and will continue to do so during 1948. It has the chemical and mechanical knowledge and experience needed for the job, as well as a keen appreciation of its opportunity and obligation to contribute to our national economy.

The paint industry is contributing something substantial to our national economy by providing the medium that creates and increases sales—*color, appearance and surface protection.* Its color laboratories have performed inestimable service by assisting many manufacturers in their design of new products and redesign of old ones to attract color-conscious merchandise buyers in today's competitive and discriminative markets. Color styling service is an important contribution to increased sales of products in general.

Organic coatings owe their development to the evolutionary rather than revolutionary progress of chemical science. The past year was one of notable advances. The ever increasing range of raw materials combined with new techniques have resulted in some new developments and many coating improvements.

One-coat hammer-effect finishes, which approximate very closely the result of 2-coat work, may be applied and baked with conventional equipment; household appliance whites, colors and blacks have improved qualities of resistance to heat, acids, alkalies, etc. and greater color purity

*Industrial Sales Promotion Mgr.

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and permanence; faster drying fillers and combination stains and fillers, coupled with better sealers and top coats, are contributions to the furniture and allied industries; higher quality metalescents in more appealing colors are stimulating increased commodity sales.

Today there is a coating with improved working properties, physical characteristics and performance qualities for nearly every product and every industry.

Shortages of certain key raw materials, such as titanium dioxide, continue to prevent the free marketing of certain types of coatings. This situation will undoubtedly continue to improve during 1948 but it will not, in all probability, be completely alleviated during the current year.

Success with protective and decorative coatings depends upon many factors other than their composition, so developments in those fields should not be overlooked. Great strides have been made in metal surface pretreatments. More attention is being given to newer methods of application; and improved baking procedures are coming into increasing use.

These are all specialized fields in themselves but the paint user, and especially the paint manufacturer, must be intimately informed about them because upon them may depend a large measure of the success with the coating selected. Some of these developments contribute to the life of the finish, but they add to the already large number of variables which complicate the design of organic coatings.

Because of the highly technical nature of industrial paints and everything pertaining to their application and use in production, as well as the tremendous number of variables which influence the completed finish, large paint firms have technical service departments to coordinate the facilities, skill, knowledge and experience of their technical and service staff, to bring them to bear on specific finishing problems.

The year 1948 can be depended upon as a year of further advancement in finishes offered and in services rendered by the entire paint industry.

American Varnish Appoints Harry J. Abrams

The American Varnish Co. of Chicago announces the appointment of Mr. Harry J. Abrams as sales representative for North Carolina, Virginia, Maryland, Pennsylvania and Western New York. Mr. Abrams lives in Washington, D. C. with his family, where for the past six years he has owned the Takoma Chair Co. and made extensive use of Pyro-Cello-Film, American Varnish Co. famous industrial finish. This practical experience plus a broad educational background secured at the Massachusetts Institute of Technology makes Mr. Abrams a most capable man to assist all manufacturers with their industrial finishing problems.

Promotions at Detrex Corp.

W. F. Newbery, formerly Industrial Sales Manager, has been appointed Assistant Director of Sales of Detrex Corp., Detroit 32, Mich., according to an announcement by W. W. Davidson, Vice-President and Director of Sales.

Mr. LeRoy Camel and Mr. W. F. Newbery

Directly reporting to Mr. Newbery, will be LeRoy Camel, the new Sales Manager of the Industrial Products Division, including metal cleaning equipment and chemicals; also, H. S. Tweedy, Industrial Service Manager, and G. W. Walter, Advertising and Sales Promotion Manager.

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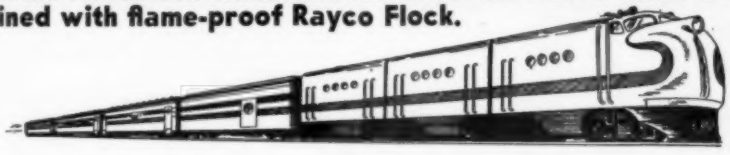

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A FEW HIGHLIGHTS ON NEW *Equipment*

By W. BEACHAM

THE CONTINUOUSLY surge forward attitude of the American people has produced numerous changes in equipment and finishes since the War's end. Some of the new items in the finishing field are so small as to be almost overlooked, but they save time and money for those who use them.

One of these small items is the material hose quick-change coupling. It is a small coupling between the material hose and the spray gun to permit the operator to remove his spray gun by hand without using a wrench, and without shutting off the paint pressure. It sounds trivial, but imagine a large automobile manufacturing plant wherein several spray booths are located in different parts of the factory, with seven or eight sprayers in each booth. Between ten and twenty different colored finishes are being circulated from the mix room (located at one end of the plant) past each spray booth and finally returning to the mixing tanks in the mix room, after its travel through several hundred feet of pipe.

Let us say that 15 different color finishes are passing each booth, through the circulating system. Each booth, with from two to eight sprayers, for an average of say four sprayers to a booth, and eleven booths not including the chassis booth or prime coat booth. Eleven booths with four sprayers each means 44 sprayers; and with 15 colors to spray, we have a possible total of 660 spray guns.

Quick-Change Couplings Save Using Several Spray Guns

With the quick-change coupling, each sprayer needs only one spray gun instead of 15. One gun, adjusted to his particular requirements and method of handling, can be switched from one hose to another in a matter of seconds, so 660 spray guns can be reduced to 44—one for each sprayer—all of which shows that the smallest of items can be of great importance when you are figuring time, production and costs. Of course, extra spray guns must be on hand for emergencies, replacement, etc.

While we are on the subject of automobile spraying, it is interesting to watch the cars going through those down-draft spray booths which have a balanced air supply system. Overspray is drawn down through grilles in the floor before being washed out of the air by the action of the water. Fresh air—controlled as to temperature and humidity—replaces the air withdrawn by the exhaust fans.

The exhaust and air supply are so balanced that cars of different colors can follow one behind the other without the overspray of a black car, for example, being deposited on a light gray car ahead. This is a marvelous improvement over the old system of building up air pressure in the spray booth—which does not take into consideration the fact that atomizing air

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and overspray must go somewhere, and nine times out of ten it decides to coat the spray operator with every color imaginable.

The balanced exhaust and air supply system is checked at regular intervals by the foreman—not with a volometer, which shows the number of cubic feet of air passing through the booth—but with a liquid smoke tube. By withdrawing the cork from a small vial, a cloud of harmless smoke is released, which permits the foreman to see what is happening to the air in a spray booth. Then he knows whether to reduce the supply of one section of the booth or increase the supply to some other area. The direction of the smoke gives visual evidence of just what is happening to the air in the booth.

Another new item for the automobile trade is for the little fellow. It is a spray booth with glass side panels to permit the customer to see his automobile being spray painted; and air filters are installed in the doors to filter the air entering the booth and reduce rejects caused by dust and dirt particles.

Interchangeable Nozzles for New Spray Guns

A new spray gun, made by a well known equipment manufacturer, is appearing on the market. It combines the old with the new. The old hand grip of a noted spray gun, designed to fit both small and large hands and balanced to reduce fatigue, has been combined with a streamlined modern design for fast production. It has a removable head so that the operator doesn't need to throw the whole gun away when the head or body is damaged. A damaged head can be replaced. The nozzles are so designed as to permit changing nozzles to spray anything—from sound-deadening material through webbing lacquers, enamels, glues, hammered-effect finishes, spatter finishes, and even ceramics. So, in many cases, all one needs is a single spray gun and several nozzles, instead of a large assortment of spray guns.

A paint filter can be attached to this spray gun so that the material can be filtered just before it enters the spray gun, which overcomes the old worry of material partially settling out in the material line, and a small section of the finished product showing excessive solids while the remainder has a high gloss.

Another spray gun, which has lately appeared, was designed for car washing. It is a syphon-type spray gun and can be easily used for spraying Varsol, or for spraying molds in foundry work; also for stippling. Some beautiful effects can be produced on caskets with this gun and the right materials. In my estimation these two guns will go a long way toward answering production painting problems.

Several spray gun nozzles have been designed for specific operations, for example, for sound deadening and road marking of different widths. Then there is a biological specimen nozzle which will deposit a thin coat of preservative on items as fragile as butterfly wings without damage. There is a heavy-center nozzle for the even lapping of strokes on large surfaces. Some nozzles are designed to produce a wide uniform fan pattern which is necessary in automatic leather finishing. Another spray gun nozzle is a low-pressure nozzle especially designed for electrostatic spraying.

For the modern decorator who believes in spraying, instead of brush work, there is a 2-gallon tank with a hook to hang on the ladder, which saves a lot of climbing up and down; also, the internal-mix low-priced spray gun has been greatly improved. This is the gun used with the small double-diaphragm 1/3-hp. compressor. For the speciality decorator using this small compressor, which plugs into

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the 110 AC electric outlet, I have tested the possibilities of spraying flock with the new flock gun—the one that has three separate air controls, one each for the container, jet, and fan. This opens up a new field of possibilities for window decorating and Christmas tree decorating right after the tree has been set up in the room; and for use in small print shops for distinctive advertising matter.

There are two new blow guns for blowing dust, lint, etc., off surfaces to be cleaned or painted. One has a pistol grip with standard connections. One manufacturer is cataloging pressure cups with a material regulator and gauge attached. The regulator connects to the air inlet of the spray gun, which allows a given pressure to pass to the pressure cup, thus making the 2-air-line system obsolete. This pressure cup can be used with the new low-priced oil-and-water extractors, using one atomizing air regulator, instead of two.

Air-Motored Agitators for All Size Containers

Have you seen the full line of air-motor driven agitators? There's one adjustable for any pail or container; one for central agitation of material in an open-top drum; one to connect to a closed drum equipped with agitator; one to clamp to the side of a drum to operate at an angle; and one that is adjustable for any container from a 5-gallon pail down to small breaker used in laboratory work.

A long-awaited system has been recently introduced. It is the standardization of spray booths. It is now possible to pick up your equipment catalogue and choose the standard booth for your requirements. No more special panels, special working depth, and special this and that to add to the cost of your booths.

Although manufacturers of water wash spray equipment have standardized their products, the formulation of paints has become so specialized that it is necessary to work out and use special compounds for use in the water. It has been found that compounds formulated especially for one type of paint in one part of the country will not work satisfactorily with the same paint from the same manufacturer in another part of the country. The different chemical content of the water often throws the compound formula off balance. In several instances I have seen a different chemical action in the water at a distance of only 12 miles away.

The specialization of paints, enamels, lacquers and other finishing materials has advanced so rapidly that one begins to ask, what's next? We now have baking synthetics which will resist the action of bleaches, soaps, and other detergents, alcohol-resisting furniture finishes, and now there is talk about perfumed finishes. Even the shape of the lowly little molecule is being studied to improve adhesion. But after looking at the "new 1918" designs in ladies' dresses, now being worn, the molecule shape is all that's left to study.

Electric Heater for Thinning Material to Spraying Viscosity

EDITOR'S NOTE: Among some of the other items of equipment not mentioned in the foregoing article, one is a "paint heater" wherein such finishing materials as paints, varnishes, lacquers, synthetics, etc., can be safely heated electrically to suitable spraying viscosity. The heater is placed between the pressure containers of material and the spray gun. It can be adjusted to heat materials to any desired temperature—up to 180° or 200° F. Materials thinned by heat, it is claimed, flow out smoothly on the surfaces being coated, adhering to the surfaces perfectly and producing a uniform thickness film of high solid content. [THE END]

Does This Look Like a Tough One To Lick?

DIP-DURANITE will handle many jobs by the fast, economical dipping method—it flows into cracks and crevices, and sets quickly without silking or sagging. The fan shroud shown above is an example of how this product can save the more expensive spraying methods.

DIP DURANITE is a Zapon Product, made in a complete line of bright, permanent colors which hold their brilliance. In addition to high lustre they offer solid coverage, a tough film, rapid production and a beautiful even coat.

On many articles or parts where expensive finishing methods are now required, we can suggest a dipping enamel procedure that can reduce your unit costs and give you top quality results. For your convenience just write, wire, or phone to Zapon Division, Atlas Powder Company, Stamford, Connecticut, or North Chicago, Illinois.

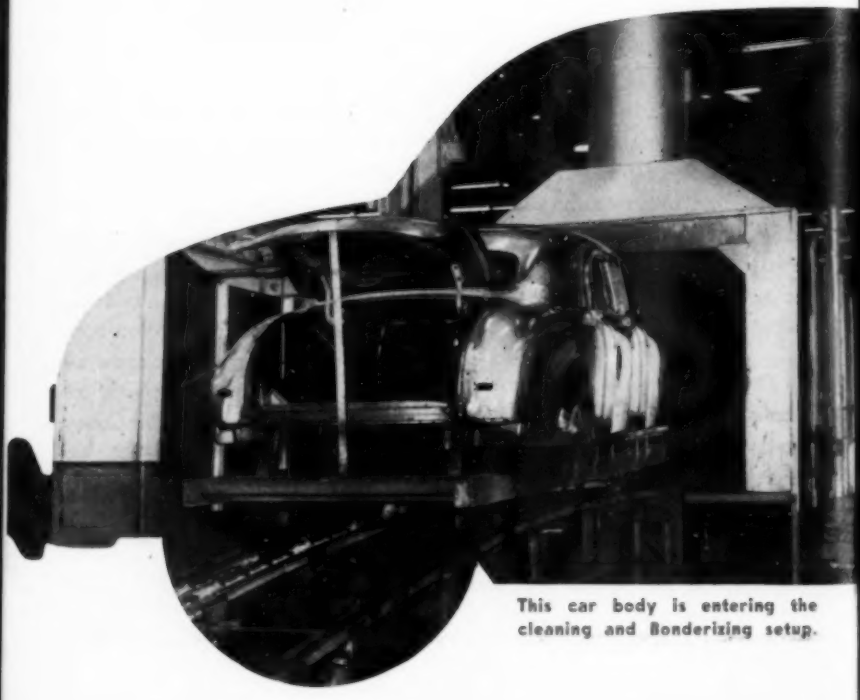
ZAPON

Production Finishes

A cleaning, Bonderizing, rinsing and oven drying setup precedes the beginning of car painting, which includes prime coating, sealing of all welded joints, oven drying, wet sanding and final enamel coats.

How Kaiser-Frazer

IT MUST BE simpler to "beat swords into plowshares" than to beat a bomber plant into an automobile factory. But the task has been accomplished and shining new cars in bright colors are rolling off the



This car body is entering the cleaning and Bonderizing setup.

lines to make the fabulous Willow Run plant famous for its peacetime products.

Preparation for the finishing of these cars starts at the end of the two body-building conveyors. At this point the complete body surfaces, inside and out, are "blown off" with compressed air to remove all metal and solder filings. Then the bodies are hand washed with kerosene to remove grease smudges and drawing compounds before they enter the Bonderizing chambers.

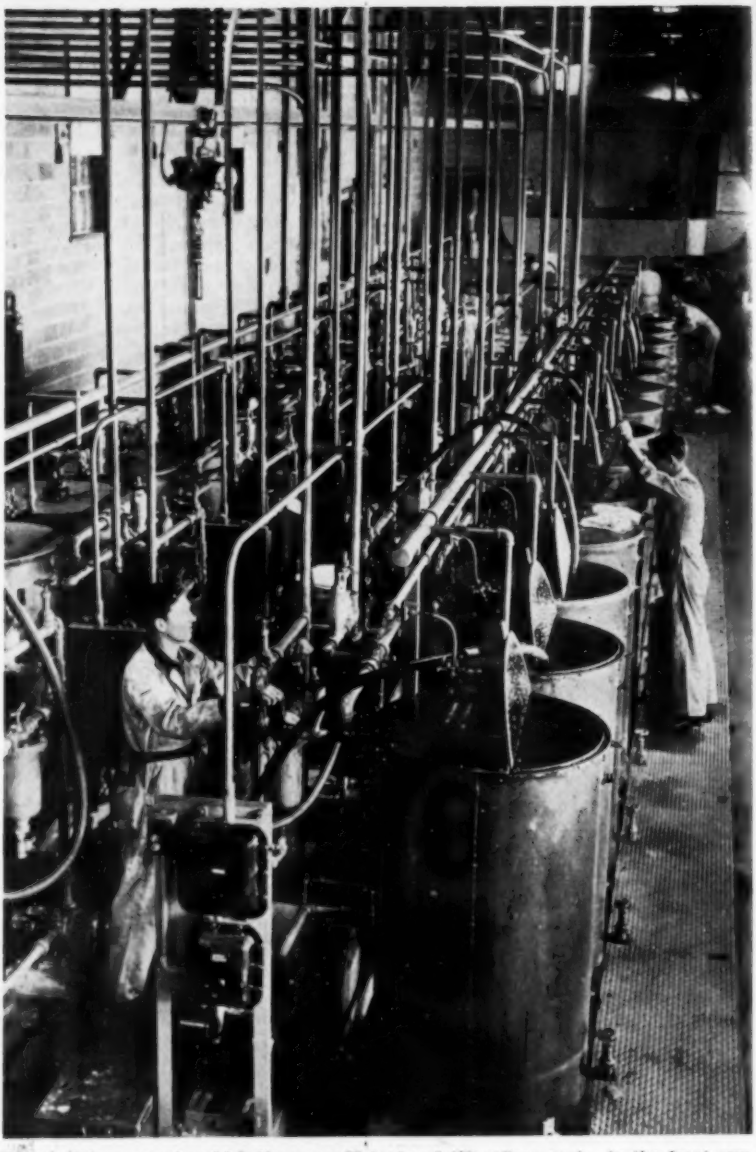
Cleaning; Bonderizing; Rinsing and Drying

Bonderizing is a chemical treatment in which the surface of the steel is, by chemical reaction, converted to a protective phosphate coating. The process consists of spraying a hot Bonderite solution on automobile bodies as they pass through various spray chambers on a completely mechanized conveyor track. Operations include cleaning, Bonderizing, rinsing and drying. This method of [illegible] and Bonderizing elimi-

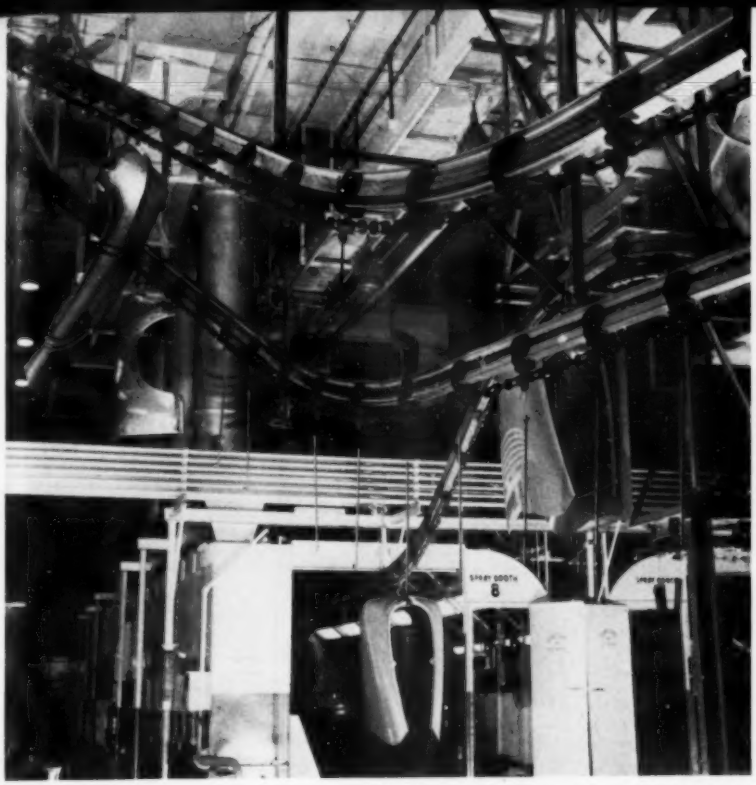
Cars are Painted

By T. C. JENNINGS
Paint Division Superintendent
Kaiser-Frazer Corporation

Pressure spray wash-off of car bodies after first wet sanding.



Paint mixing room in which there are 28 tanks of 120 gallons each. In the front row, at right, are mixing tanks; in the back row, at left, are supply tanks. Each tank has an agitator. This system includes pipe lines which run to and from the spray booths.



Twin overhead chain conveyor lines carry fenders and hoods into the top coat spray booths, after a thorough wet sanding and drying. Some of the conveyor lines rise to high levels to provide more working space below.

nates, so far as it is possible, the "human element" in preparing the surfaces of automobile bodies for painting. The Bonderite treatment assures excellent, long-lasting durability of applied finishes, and it also provides a check on metal cleaning operations.

The process removes the last traces of grease and drawing compounds, neutralizes any residual acid or alkali on the surface of the car bodies, and removes any hand marks that may have been present before processing. Should the paint coating on a Bonderized body be scratched or dented, so that bare metal is exposed, the phosphate coating will retard the spread of rust which forms on the unprotected steel. The formation of rust will be confined to the damaged area.

The complete underbody is sprayed with a black primer. All welded and soldered joints are knife glazed to fill solder pits and file marks.

Combination Primer-Surfacer Baked Half an Hour at 270° F.

Car bodies are now transferred from the heavy body-building trucks to the lighter paint trucks, and placed on two conveyor lines which enter the prime coat spray booths. Two coats

of combination primer and surfacer are sprayed over the outside of each car body, and one coat is sprayed on the inside. The prime-coated bodies now enter two bake ovens through which they travel for 30 minutes at 270° F.

Welded Joints Are Treated with Special Material

As the car bodies leave the ovens, an asphalt-base material is applied with a flow gun to all welded joints, inside the cowl, floor pan, and trunk. This coating seals those joints against the possible entrance of dust and moisture. The complete floor pan, all inside surfaces of the cowl, and the inside of the trunk are now sprayed with a heavy asphalt material which acts as a sound deadner.

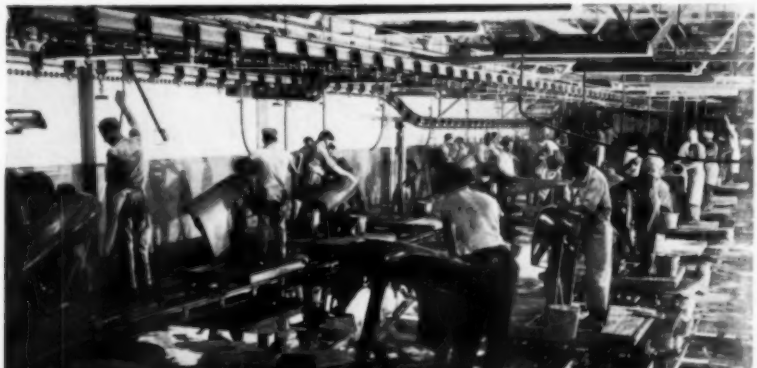
At this point the two conveyor lines, on which bodies have traveled thus far, branch out into four lines which carry them through all succeeding operations.

Inspection; Repair Priming; Wet Sanding; Dry-off Oven

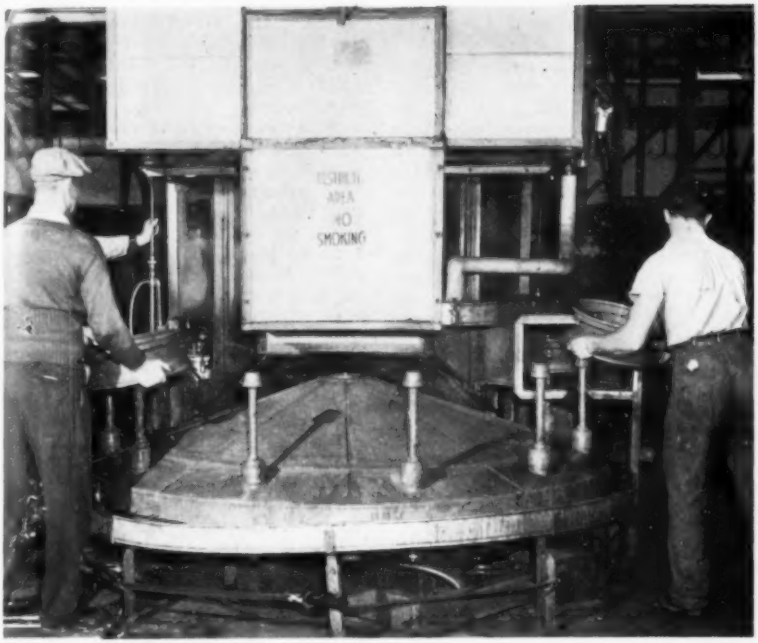
Now the bodies pass through a battery of lights and are carefully inspected for any defects in the metal surfaces or painted areas. All of the repair spots and weld joints are block sanded with air-powered sanding machines. Surfaces are cleaned by blowing them with compressed air guns and following up with a tack rag wipe-off. Each body then enters a spray booth where all sanded spots are sprayed with primer and surfacer, and where door jambs and areas under trunk lids are sprayed with the specified outside body color. Following the application of these coatings each body enters a bake oven through which it travels for 30 minutes at 275° F. After leaving the oven, each body has ten minutes to cool before another operation begins.

Bodies are now ready for water sanding. The complete outside sur-

(Continued on page 43)



One of the carrousels on which prime-coated fenders are wet sanded. The workers ride as they do the sanding. This system duplicates rhythm of on-conveyor sanding.



This automatic wheel-spraying machine takes care of painting 600 wheels an hour for Kaiser and Frazer automobiles. This rear view of the machine shows how the wheels are placed on rotating vertical spindles by which they are conveyed through the paint spray booth. The workman at the right removes painted wheels and places them on the drying oven conveyor.

faces are hand sanded with No. 320 grit sandpaper, to produce a uniformly smooth surface. The bodies are then washed, and their insides are blown clean of any water. Washed bodies now pass through the wet-sand dry-off oven (350° for 10 minutes) after which they are inspected for defects, such as small pits or file marks that were not sanded out on the water sanding deck. Each body is blown clean with compressed air and tacked off (wiped with a tack rag) to insure clean surfaces for the final enamel coatings.

Final Enamel Coats; Baking; Repair and 2-tone Finishing

Bodies are now ready to enter the spray booths where two coats of synthetic enamel are applied. A short interval of time for air-drying is allowed between coats. This enamel is sprayed at a consistency of from 20 to 27 seconds viscosity, measured with a Ford No. 4 cup, at a temperature of 78° F. The two final coats are sprayed uniform and wet to insure a good flow-out which keeps the "orange peel" effect down to a minimum. Painted bodies leaving the

spray booths are allowed a 3-minute flash off [air-drying] period before they enter the final enamel baking oven through which they travel for 30 minutes at 275° F.

After leaving the oven, conveyors move the painted bodies through a battery of flourescent lights, where the bodies are again carefully inspected for possible defects. All "OKs" are delivered to the trim shop; all "repairs" and 2-tone bodies go to the "repair" and 2-tone lines, respectively. For the latter, the lower part of each body is masked off with tape and paper and the roof panel is sprayed with the specified contrasting color.

All of the "repairs" are sanded, resprayed, baked for 30 minutes at 275° F., and delivered to the trim shop.

Finishing Small Parts—Cleaning; Priming; Enameling; Baking

Small parts, which include hoods, fenders, wheels and any small trim parts, are finished on balconies adjacent to and overlooking the main central plant. Overhead monorail conveyor lines bring parts from fabrication or storage to the balconies and, after finishing, return them to the trim lines for assembly.

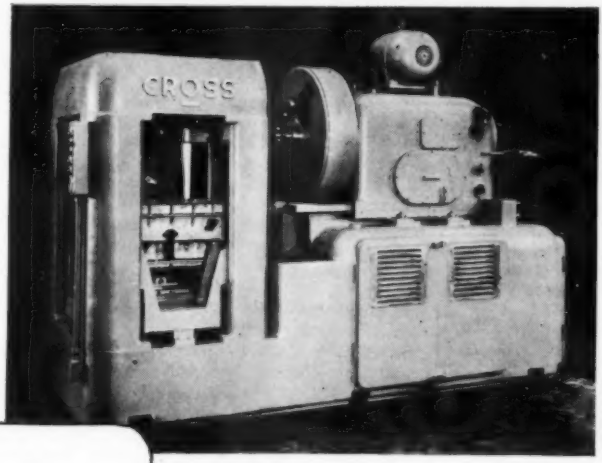
With the exception of wheels, all parts go through a 5-stage washer similar to the washers used in the body cleaning as described in previous paragraphs of this article. This washer is set on a cycle of one minute for each stage. After passing through a drying oven, small parts are carried through a spray booth where a double coat of synthetic primer is applied. This is baked for one hour at 275° F.

One of the features of the small parts finishing is the five carrousels on which parts are wet sanded. These carrousels are horizontal floor-level conveyors which run on tracks that are laid out in an oval shape. Mounted on the conveyor are platforms on which sanding bucks or forms hold hoods, fenders and small parts. The operator removes a piece of work in process from the overhead monorail conveyor, places it on the form and wet sands it, using No. 320-A wet-or-dry sandpaper. He rides the conveyor as he sands the work. By the time he has made one complete "round" on the carrousel he has sanded the part. He transfers it to an overhead monorail which carries it through a drying oven and then into the top coat spray booth where a double coat of synthetic enamel of the proper color is applied. This coat is baked for one hour at 275° F. Parts are delivered by the same conveyor to the assembly lines.

Wet sanding bodies after primer-surfacer coat has been sprayed on and baked.

Automatic Spraying of Wheels; Baking; Mechanical Striping

Wheels are received all Bonderized and primed. As they arrive by overhead monorail conveyor from storage, they are rag-wiped and placed on holders on a revolving turntable. This turntable revolves clockwise. In the booth, four spray guns are mounted



A Fine Protective FINISH for High Production Tools

Specialized finish of high quality is required to protect the surfaces of high-production automatic tools . . . and specialized finish of high quality is what Egyptian supplies, always.

Egyptian offers the right finish for every requirement. If your needs are for standard finish, or for something very special, you can safely rely on Egyptian. Inquiry is invited.

THE EGYPTIAN LACQUER MANUFACTURING COMPANY

SPECIALIZED PRODUCTION FINISHES

P. O. BOX 444, NEWARK, N. J

in fixed position on a reciprocating arm which travels in an arc parallel to the perimeter of the turntable. As the turntable carries the wheels through the booth, the spray guns follow through for the width of the arc and then cut-off as the carrier arm returns them to the starting position where they automatically cut-on to spray the next wheel. This automatic wheel spraying machine has a capacity of 600 wheels an hour, coating one side.

Wheels are baked for 30 minutes at 275° F. After cooling for about 15 minutes the wheels are removed from the overhead conveyor to be striped. Stripes are laid on with a mechanical striper which applies two stripes (one wide and one narrow) as the wheel revolves on a fixed shaft. Pigmented lacquer is used for striping. The lacquer stripes dry as the wheels travel on an overhead conveyor to the tire-mounting section. One operator and two handlers stripe 600 wheels an hour.

Paint Is Piped to Spray Booths from Central Mixing Room

All spray booths, whether down draft or not, are of the waterwash type. A central supply system furnishes material to all spray booths, both for finishing car bodies and small parts. The mixing room contains 14 mixing tanks and 14 supply tanks; each of the 120-gallon units is equipped with agitators. There are 12 color lines going out to the spray booths; a line pressure of 75-lbs. is maintained going out, with 25-lbs. pressure on the return line. All material passes through copper screen filters. Viscosity of the primer is 28 seconds at 80° F. The K-F laboratory must approve sample of all paint from vendors prior to shipments.

Advance Paint Co. Expands; Moves Into New Plant

A million-dollar expansion program designed to increase production capacity six times is announced by the Advance Paint Co., Indianapolis, Ind., manufacturers of industrial finishes.

The company is moving all of its manufacturing facilities to newly-acquired and constructed property in Indianapolis and will dispose of its old plant, according to R. E. Kelly, President.

The new factory layout will be centered around a large 4-story and basement building, which the company has purchased. This building alone has 120,000-sq. ft. of manufacturing floor space. The multi-story building will enable the firm to utilize gravity processes throughout the manufacture of its products.

Four other buildings are being constructed at the new factory site. A 2-story and basement building will house offices and cafeteria on the first floor and complete laboratory facilities on the second floor.

A new varnish and synthetic resin plant will give an additional 10,000-sq. ft. of floor space. Also under construction are a tank storage plant with a capacity of 400,000 gallons of raw material, and a special building for the storage of nitro-cellulose.

Mr. Kelley says the new factory site has been laid out in such a manner as to cut fire hazards to a minimum. Cost of the expansion program, involving purchase of the property, remodeling and construction of buildings and installation of the most modern paint-making equipment, will total $1,179,550.

The Advance Paint Co., one of the oldest manufacturers of industrial finishes in the United States, has operated continuously since 1899. Its line of products includes O-Shelac, Laco-Var, Uni-Fill, Hammered Lacquer, and a complete line of stains, lacquers, fillers, paints and enamels for wood and metal finishing.

The DeVilbiss School of Spray Painting Announces Classes

Spray Painting Classes for Industrial Finishers for the first half of 1948 have been announced by The DeVilbiss School of Spray Painting in Toledo, Ohio. The intensive one-week courses will begin on February 2, March 1, May 10 and June 7.

All users of DeVilbiss equipment are eligible for this tuition-free instruction on the spray painting technique, the function and care of spray equipment. All those interested should write for reservations as early as possible to The DeVilbiss Co., 300 Phillips Ave., Toledo 1, Ohio.

Proper Surface Preparation is so-o-o important!

. . . that goes for *Metal Finishing, too!*

OAKITE PRODUCTS, INC., 20 Thames St., NEW YORK 6, N. Y.
Technical Service Representatives in Principal Cities of U. S. & Canada

Consult

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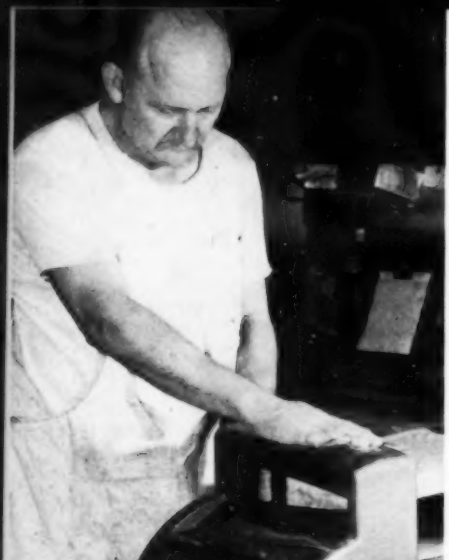
for Specialized Metal-Cleaning and Surface-Conditioning Materials



When the second primer coat is dry, all exposed surfaces are wet-sanded with No. 360 wet-or-dry sandpaper and water.

Finishing

Technique of applying high class, solid color bake enamels, in both smooth and wrinkle finishes on Bonderized, prime-coated metal cash registers at N. C. R. Co.

By M. W. St. JOHN Job Foreman of Enameling Department

IN THE FIRST PART of this article, which appeared last month, the process of applying wood-grain finish on all-metal cash registers was described. In this article I will explain the surface preparation, prime coating and finishing of cash registers that are given solid color finishes—in both smooth and wrinkle texture.

Please keep in mind that the surfaces are spot puttied regardless of whether the finish it to be smooth or rough but, of course, extra care is taken to prepare surfaces for smooth finishes. Also, please note that the final finish determines the color of the prime coat. Both coats must be very close to matching in color.

Preparation for and Curing of Smooth Enamel Finishes

Following the drying of the second coat primer, all exposed surfaces are wet sanded with No. 360 wet-or-dry sandpaper, using water as a lubri-

rant. Surfaces are carefully inspected to make sure that the complete register is without a blemish and clean enough to proceed through the final finishing operations.

It is at this point that the work is again placed on the conveyor, tacked off and sprayed with a double coat of enamel. This spraying job is performed under an air pressure of 8 to 12-lbs. at the container and close to 80-lbs. at the spray gun. The spray gun is fitted with a fine nozzle and usually a No. 765 cap.

Washed Filtered Air and Water Wash Spray Booths.

Here I would like to mention that our spray room is supplied with water-washed, filtered air and that the spray booths are of the latest water-wash design. None of our operators finds it necessary to wear a mask.

No finishing job can be clean without a clean oven. We emphasize this fact and we strive to maintain a regular cleaning schedule. The finish is baked at 300° F. in a convection-type steam-heated oven for one hour.

Still riding the conveyor the finish is inspected and checked with the order card. This inspection includes a careful check on color, gloss, cleanliness, and classification. The registers that are passed are "trade-marked" and those rejected are touched up or refinished. *(Continued on page 56)*

Here a workman sprays wrinkle enamel on a cash register case which is mounted on turntable in a water wash spray booth.

PART II

NATIONAL CASH REGISTERS

Final inspection of a cash register case finished in black wrinkle enamel—after the decal has been put on. From here it will proceed to assembly.

Cash registers to be coated with a wrinkle finish are not sanded after the second prime coat. However, this is the only operation omitted on these shells. They receive identical operations from polishing through spot putty glaze and inspection. It should be clearly understood that *we use the wrinkle finish only as a decorative finish, and not to hide any rough metal or defects or faulty workmanship.*

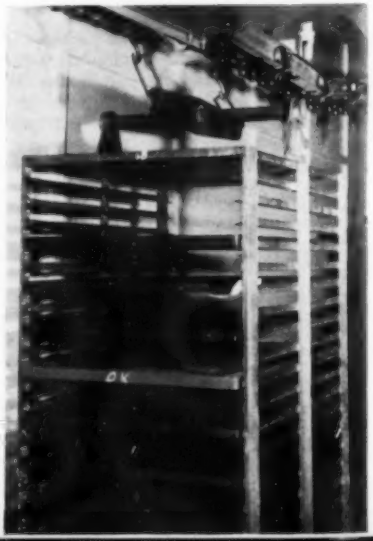
Register shells and parts are removed from the conveyor and placed on heavy wire trays on which they receive a double spray coat of wrinkle enamel, either in black or a special color. Wrinkle enamel is applied at a viscosity of 35 seconds (K216 cup) at 77° F.; tank pressure, 8 to 12 lbs., and atomizing pressure (at spray gun nozzle) 80-lbs.

The loaded wire trays are placed in castered trucks equipped with a swivel hook which is suspended from a monorail conveyor (see illustration). These hangers will carry from three to six register shells with all parts. The loaded hangers, propelled by the conveyor, ride on casters on the floor until they reach the air lock at the entrance of the baking oven. This oven is located on the roof of the building. The conveyor moves very slowly through the oven, its speed being only 4½-in. a minute. Pieces circulate in the oven for 2½ hours at 150° F.

If all of our cash registers were finished in black wrinkle enamel we could increase the temperature and decrease the baking time, but many of them are finished in light colors which would discolor if exposed to high temperatures. Due to the slow moving conveyor, when registers leave the air lock at the exit end of the oven they are cool enough for application of name and insignia decals.

I have not listed all of the inspection stations along the line but our inspection system is thoroughly adequate. Finish specifications are rigid. It is not only economical to have frequent inspection, but with good materials, it cuts down the number of rejects and insures lasting durability of the finish. The finish on a cash register must endure for many years, during which time it must remain attractive. [THE END]

One of the castered racks for trays of metal parts. All-metal racks like this are moved by overhead chain conveyor through the oven.



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A NEW FAST WORKING **ZINC BLACK**

MARKING *Another* BLACK MAGIC *Achievement* IN THE FINISHING FIELD

DO you use zinc or zinc alloys in any form? Get the facts about Black-Magic Zinc Black. This modern treatment imparts a fine corrosion and abrasion resistant finish to zinc with simplicity and speed! Not only a highly attractive finish in itself, but an excellent bond for paint which also affords corrosion protection to unpainted areas.

Illustrated are but a few of the many thousands of applications for this useful finish. Write for details on this, also on Black-Magic finishes for all other metals. (Send us an article for sample processing.)

MITCHELL-BRADFORD CHEMICAL COMPANY
MODERN METAL FINISHES
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NEW JERSEY: Lacquer Finishing Co., Inc., Clifton, N. J. C. D. Hamilton, Fayetteville, N.Y.
PHILADELPHIA: Albert Printz, Germantown CLEVELAND: Universal Paint & Varnish Co.
DETROIT: The Danell Co. MILWAUKEE: A. B. Plating Supply Co. ST. LOUIS: G. S. Robins & Co.
DALLAS, TEX.: Texakana Supply Co. LOS ANGELES: Barber-Webb Co.
OAKLAND: Geo. A. Kushman Co.

Product Painting

View inside infra-red gas heated oven. Exhaust ducts carry off solvent vapors. A variety of parts and products move through this oven by overhead conveyor.

TO SUCCESSFULLY operate a custom finishing shop the equipment must be modern, the layout flexible, and methods economical. Products finished in our shop range in size from ½-oz. name plates 5-in. long, to 800-lbs. home freezers of 18-cu. ft. capacity. Materials include sheet metal, spun steel and aluminum, cast aluminum, plastics, wood and papier mache. The finishes we put on these products include wrinkle, hammer, lacquer, baked enamel and specialty finishes. This will give you some idea of the diversification of products in size, weight and material, as well as the finishes we use.

Equipment; Metal Cleaning; Spraying and Dipping; Drying

Our metal cleaning facilities include a vapor degreaser and four auxiliary tanks, all serviced by an electric hoist operating under an over-

Plant manager of Swanson & Co., Chicago, describes and illustrates the layout and operation of equipment for finishing diversified products in a modern custom shop.

head monorail. Equipment for applying protective and decorative coatings consists of one 3-man spray booth through which the conveyor passes, one single spray booth with access door to the conveyor, four waist-high specialty spray booths and a portable dip tank with drain pan attached.

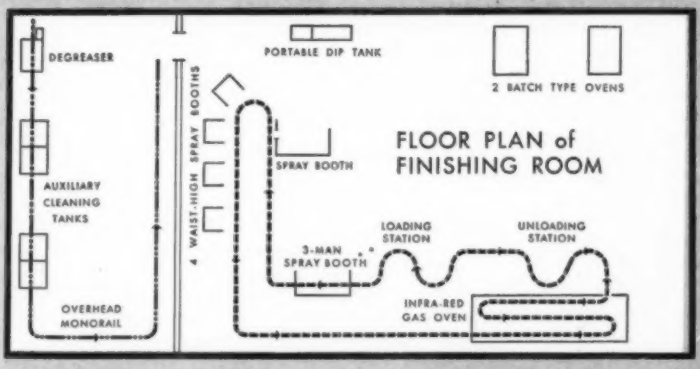
To force dry paint and enamel coatings, we have a conveyorized infra-red gas-fired oven and two batch-type gas-fired ovens.

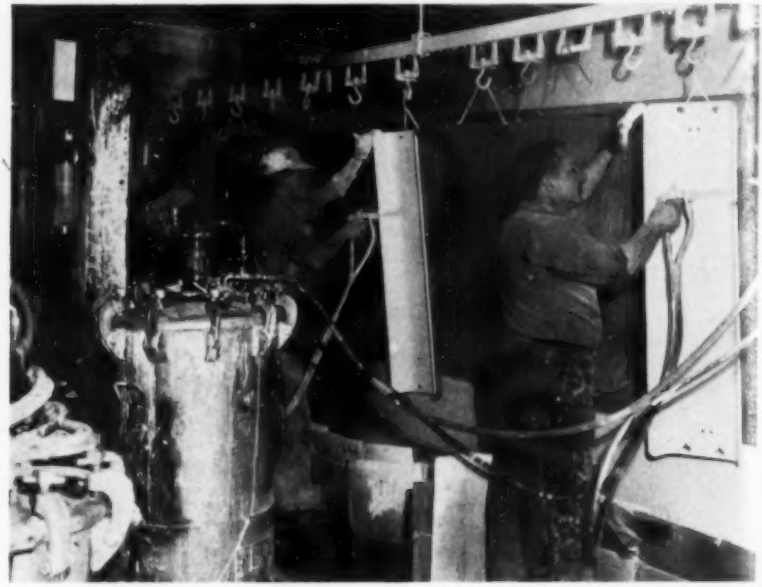
For moving work in process to and from the operations involved in custom finishing, we have an overhead chain conveyor (300-ft. of it) with swiveled hooks as shown in the accompanying pictures. This conveyor is driven through a variable-speed transmission, so we can set the speed of the conveyor to suit the work.

Working in conjunction with finishing engineers, much thought and careful planning went into the selection and placement of this equipment. In plants where the products and finish are fairly uniform, choice of equipment and its location for economical production can follow a definite and obvious pattern, but in a custom finishing shop, where many kinds of products as well as finishes are handled, errors in type of equipment or in its location could limit the rate of production and prove to be a serious handicap. *(To page 60)*

in a Custom Shop

By C. F. SWANSON





The 3-man spray booth where a double coat of enamel is sprayed on many products.

Metal Items Received Are Coated with Grease or . . .

Products we finish are received from many different sources. Some items are made locally; others are shipped in. All of the metal items we receive are covered with oil, grease or traces of drawing compound. Some of these grease coatings are easily recognized, in which case we know what to use to remove them in preparation for finishing. On other items the nature of what is on the metal surfaces is questionable, and we sometimes have to do a little experimenting to determine just what to use and how to use it to clean the metal satisfactorily.

Once we received a lot of chime cases to be finished. The fabricator had used a pigmented drawing compound on these cases. To properly clean them we found it necessary to dip them in oxalic acid, then give them a hot rinse, blow them dry, and then put them through the vapor degreaser.

In some instances it is necessary to dip some of the spun steel items in an alkali cleaner to loosen the drawing compound, and then follow with a hot water rinse before the work goes through the degreaser. In the case of some spun aluminum products, after degreasing we run them through a secondary butyl acetate bath to remove water-soluble materials. It is for these operations that we installed the four auxiliary cleaning and rinsing tanks as well as the degreaser.

(To page 62)

BONDERIZING

..the start of the automobile's fine finish

Before the prime coat and the sprayed and baked finish coats, comes the trip through the Bonderizing line. Here bodies, fenders, and sheet metal parts get the treatment which protects and preserves the appearance of the final finish.

This effective, fast, economical treatment is used on most cars, trucks, and buses manufactured today. Bonderizing changes the surface of metal to a non-metallic phosphate crystalline coating which is a perfect base for paint. In addition, it affords good protection from rust and corrosion, retards the spread of finish failure around accidental breaks in the paint film, promotes lasting fine appearance.

Bonderizing costs far less than its value as a product improvement and sales feature.

Investigate Bonderizing as protection for the fine finish of *your* product!

PARKER RUST PROOF COMPANY, 2176 East Milwaukee Ave., Detroit 11, Michigan

BONDERIZING	PARKER PROCESSES	PARKERIZING	PARKER PROCESSES	PARCO LUBRIZING
Holds Paint to Metal		Inhibits Rust		Retards Wear on Friction Surfaces

Bonderite, Parco, Parco Lubrite—Reg. U. S. Pat. Off.

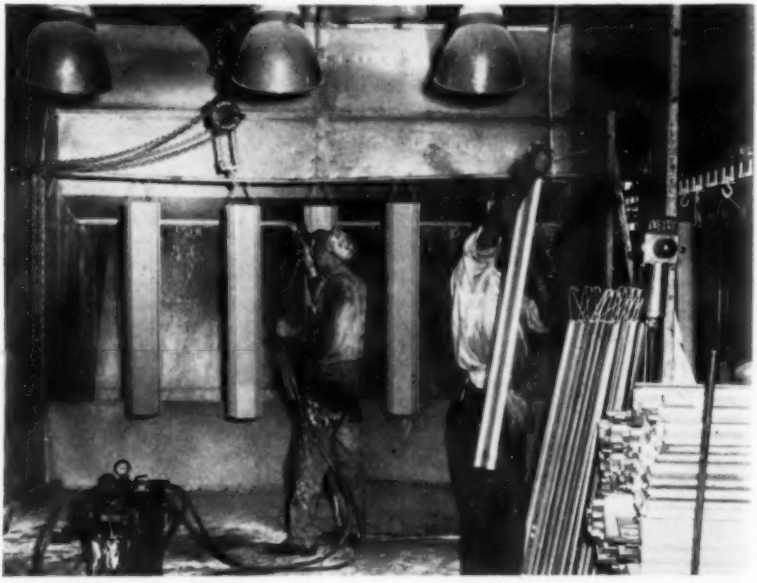
Special Problem of Vapor Degreasing

Our vapor degreaser is fitted with a special attachment that should prove interesting to many finishers who are faced with the task of degreasing thin flat sheet metal. What prompted us to add this attachment was a large run of sheet metal reflectors 12-in. wide by 5-ft. long. We still finish these and similar reflectors. When these pieces are lowered into the degreaser the thin metal heats rapidly. Soon they are the same temperature as the vapor; result: no condensation — and no degreasing. To remedy this condition, cold distilled trichlorethylene is pumped through the flow nozzle at the end of a metal pipe which is connected to a rubber hose leading from a unit adjoining the end of the degreaser.

Pump control, to regulate the volume of flow, is located in front of the degreaser within easy reach of the operator. Sheet metal reflectors are lowered into the degreaser. As the cold solution is flowed over them, their temperature is lowered sufficiently to cause condensation of the trichlorethylene vapor, and the consequent cleaning of the surface. Reflectors are then turned over and the operation is repeated. After leaving the degreaser the reflectors are wiped with a tack rag and hung to the conveyor.

Technique of Spray Painting Metal Reflectors in White

From this point the procedure is simple. The reflectors are carried by conveyor through the 3-man spray

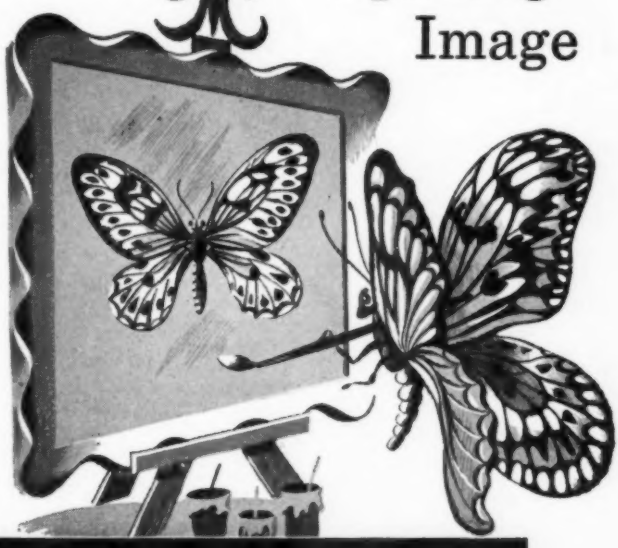


A water wash spray booth with access door opened at right in the picture. The overhead rail and hoist (upper left) are for handling heavy metal products.

Caught by a hungry bird, the Philippine butterfly spits a bitter fluid and soon teaches its insect-eating enemies to pass it by. So the imitative moth, who is good eating himself, has learned to look exactly like his inedible cousin. He reproduces the butterfly's skin spot for spot, one of the most perfect copies in nature.

For the perfect answer to an appearance problem in industrial products, think of lacquer. Lacquer is beautiful as a butterfly's wing, durable, easy to apply. It dries fast, without costly equipment. Your lacquer supplier would like to tell you more about this perfect finish.

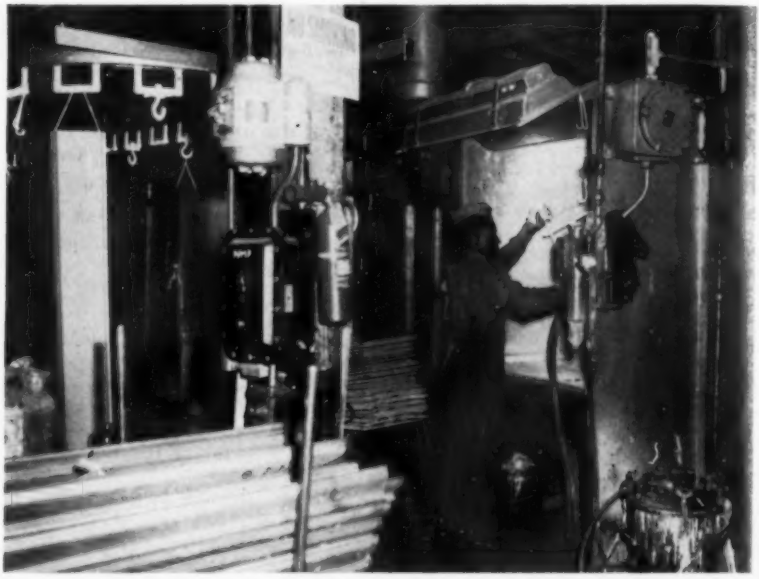
Spitting Image



Commercial Solvents Corporation

17 EAST 42ND STREET, NEW YORK 17, N. Y.

CSC makes solvents and plasticizers, but is not a lacquer manufacturer.



One of the waist-high specialty-finish spray booths. Other spray booths appear at left.

booth. The first operator sprays the outside and inside with one coat of primer. Then the piece is turned by a cam mounted on the monorail, so that it is in position for the second sprayer who applies the first coat of enamel—a light coat applied uniformily. This coat is kept slightly on the dry side; it has a setting up time of about ten seconds before the third sprayer, or finisher, gives it a full wet coat of enamel. White synthetic enamel is used.

The object of this method of spraying is to produce a smooth uniform finish with maximum film thickness, thereby giving our customers a satisfactory light reflectivity reading, which is very important on a light reflector. Going "around the loop" by conveyor permits a flash period of seven minutes before the reflectors enter the infra-red gas oven for a 11-minute baking at 300° F. Conveyor speed is 12-ft. per minute on this work.

The two gas-fired, batch-type ovens have a temperature range of 150° to 500° F. These ovens are used for jobs requiring special baking temperatures and periods, for short production runs, and as auxiliary units to the infra-red gas oven.

Painting Papier Mache Striped Candy Canes

Going to the other extreme in product painting, let us consider the giant size striped candy canes and lollypops made of papier mache. Striped canes are finished entirely by spray painting in two pieces—the stick and

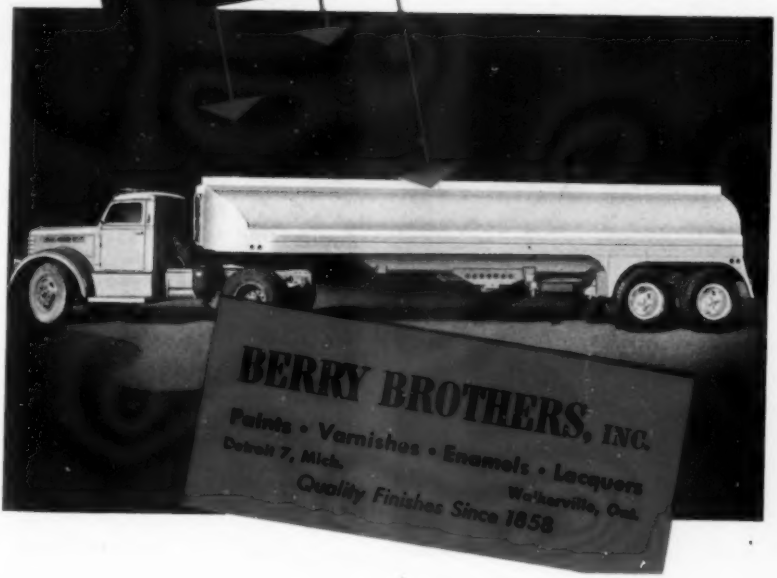
Protecting Heil "Trailerized" Tanks...

BERRY BROTHERS
No. 10
FERROCHROME PRIMER

The Heil Company* is just one of the many leading manufacturers who selected No. 10 Ferrochrome Primer because it can "stand the gaff." It's highly resistant to corrosion . . . proven by hundreds of hours of salt spray tests. It has excellent exterior durability. Dries to recoat in 15 minutes. Get the facts on how No. 10 Ferrochrome Primer can apply to your finishing problems.

Address Industrial Sales Division.

*THE HEIL COMPANY
MILWAUKEE, WISCONSIN



the handle crook. When completed the two pieces are fitted together by means of a close fitting sleeve attached to the handle crook.

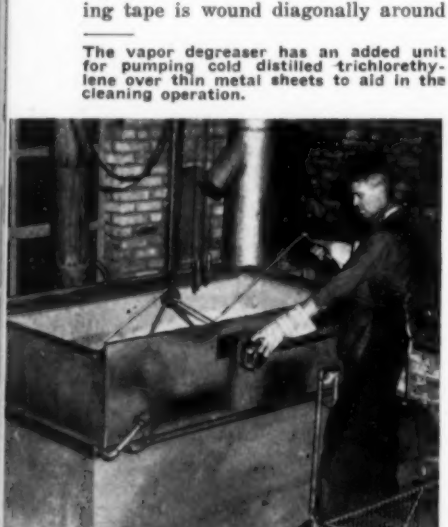
Each piece is suspended from the conveyor by means of a sharp-pointed spring hook, the points of which dig into the inside surface of the hollow tube. First, the pieces get a spray coat of lacquer-base sealer. This is followed by knife glazing to fill the imperfections in moulded papier mache. Lacquer-base filler is used for this knife glazing. The same material is also sprayed over the entire surface. Of course, the knife glazing is an off-conveyor operation.

When dry, the filler-coated surface is sanded with No. 5/0 sandpaper. A blowing off and rag wiping follows. Then the work is placed back on the conveyor for a spray coat of white lacquer which is allowed to air dry about four hours. Then 3-in. masking tape is wound diagonally around the canes and they are again suspended on the conveyor for a spray coat of red lacquer. When dry, the masking tape is removed.

Papier mache lollypops receive the same basic coating operations, except that the final lacquer coat is in varied colors, such as strawberry, orange, lemon and lime. When this is dry a spray coat of 4-hour varnish is applied. While this coat of varnish is still wet, tiny glass beads are sifted on. Some of the beads are transparent while others are white. The mixture gives the appearance of a genuine coating of sugar.

There is never a dull moment in a custom finishing shop.

The vapor degreaser has an added unit for pumping cold distilled trichlorethylene over thin metal sheets to aid in the cleaning operation.



Makes Weather-Ometer Tests on Painted Products

The United States Testing Co., Inc., with its main laboratories at 1415 Park Ave., Hoboken, N. J., announces new low prices for Weather-Ometer tests—for determining the resistance of paints, plastic materials and coated fabrics to all types to weathering.

The increased number of tests being conducted to determine resistance to weathering, and the importance of this method of test, has caused the Testing Company to reduce its Weather-Ometer fees, so that use of this important test may be still more widespread.

W. G. Sheane Joins Staff of Zapon Division, Atlas Powder

In keeping with plans to augment technical staffs and increase plant facilities, the Zapon Division of Atlas Powder Co. has recently retained the services of W. G. Sheane, prominent chemical engineer.

Mr. Sheane, holder of two degrees in chemical engineering, is perhaps best known in the finishing industry as a former editor of "Organic Finishing" magazine. Prior to serving in that capacity he was with the American Can Co., New York City, as a chemical engineer, and prior to that was five years with General Electric as a finishing engineer.

Mr. Sheane is a graduate of Rensselaer Polytechnic Institute, and Carnegie Institute of Technology. He is an active member of the American Institute of Chemical Engineers, American Chemical Society, and American Electroplaters Society.

THEORY AND PRACTICE OF *Furniture Finishing*

PART II

Author's Note: In this series of articles I will take up only the finishing of new wood furniture.

By ROLLIN H. WAMPLER

FOR VERY light-colored modern finishes on furniture and store fixtures the wood itself must be very light in color. Some woods, such as prima vera and avodire, are uniformly light in color and therefore require no bleaching. However, the beautiful figure in black walnut butt and stump veneers, and the matchless patterns that occur in mahogany may be desired in a very light color. Also, it is not always practical to select lumber or veneer of uniformly light color—oak and maple, for example. In these cases it is necessary to use a chemical bleach to remove natural coloring in the wood.

Usually it is most practical to apply bleaching compound over the entire area, even where it is only necessary to remove color from certain strips or areas. Local or spot bleaching is sometimes done, but it is troublesome and expensive and requires considerable skill.

The Technique of Bleaching To Produce Blonde Effects

For industrial furniture finishing the commercially prepared bleaches are far more satisfactory than those the finisher may try to mix on the job. The most powerful and most generally satisfactory commercial bleach that I know of is the so-called 2-solution bleach. Two materials are supplied.

Bleaching with the 2-solution bleach may be done in either of two ways. By one method one solution is applied, followed in a few minutes by the other. The more generally used method is to mix the two solutions in definite proportions just prior to application. Only enough material for two or three hours' use should be mixed, for the mixture rapidly loses its effectiveness. If the bleaching action of the mixture is more powerful than necessary, it may be diluted to as much as 50% with plain water. Unused material left overnight must be discarded.

The 2-solution bleach can be applied by spraying, brushing or dipping. Only glass, wood, earthenware or vitreous enameled containers may be used, since contact with metal must be avoided. Stir the solution with a wooden paddle. If the solution is sprayed, a glass container on a suction-type gun is used. The gun is washed by spraying plain water

through it immediately after use. Apply a very wet coat. If the solution is to be brushed, apply it freely with a fiber brush. Some finishers swab it on with a soft cotton cloth or cotton waste. Operators who handle bleaching material should wear goggles, rubber gloves and rubber aprons, since the material may damage the skin. If it does splash on the skin or clothing, wash it off immediately with plain water.

After Bleaching the Wood . . . Drying and Sanding

The bleaching action is completed in about an hour. If the wood is still not light enough in color, more bleach may be applied. Do not attempt to force-dry the wood being bleached until at least an hour after the bleaching solution has been applied. Otherwise much of the effectiveness of the material may be lost.

After the bleach-treated wood has air dried about an hour, the chemical residue from the bleaching material should be sponged off with clear water or a mild acid solution (3 or 4-oz. avdp. sodium bisulfite per gallon of water). Some finishers do not wash off the residue; they rely upon sanding to remove it. It is better practice to wash it off, however.

The one-solution bleaches, supplied ready for use, are more convenient but, in so far as I know, some users of bleaches consider them less powerful than the 2-solution materials.

The drying of the bleached wood should be thorough. Overnight air-drying or force-drying four hours at 130° F. is usually enough, if the final coats are to be air-dried. If any of the final coats are to be force-dried, then the bleach should be air-dried 48 hours or force-dried for eight hours at 140° F. to prevent blistering.

After the necessary drying time, the bleached surface must be well sanded and the dust blown out of the pores with a dusting gun, or brushed out with a stiff-bristle brush. If the bleaching agent has been applied lightly, care must be taken to avoid sanding the surface too much, or the darker unbleached areas underneath may be exposed.

Some Woods Need No Staining But Others Do

When transparent finishes are used on wood, the wood itself may have an attractive natural color which requires no staining to produce a pleasing appearance. Clear finishes penetrate and darken the wood surfaces slightly, at the same time accentuating the figure. Examples are natural maple, birch, black cherry, eastern red cedar, figured red gum, and some of the highly colored imported veneers such as amaranth, cocobola, ebony and rosewood.

Again, some woods may require only the coloring that a suitable filler will produce. The modern light walnut colors are a good example of this.

Beautiful woods that require no stain are the exception rather than the rule. Even such highly colored cabinet woods as mahogany, cherry, and red gum will usually show more richness and depth when properly stained, depending upon the particular color effects desired. Light maple and birch are more pleasing in most settings when stained.

Why Stains Are Used on Fine Cabinet Woods

Stains are used for three distinct purposes. The first is to increase the color contrast of the natural figure and thus enhance the distinctive wood grain pattern. The utmost clarity and freedom from smudging are required of stains used for this purpose.

The second function of stains is to produce a more even or uniform overall tone. Sap stains and shading stains are applied to local areas that are light in color to make them match

Standard Scores Again!

1000 SPAR
"The Champ" of Varnishes

Another happy example of our specialized research experience — 77 years of it — has produced this remarkable new development.

We've had "1000 SPAR" in laboratory testing and at tropical proving grounds for years. In every exposure test it has shown no sign of breakdown long after competitive varnishes have failed.

"1000 SPAR" has proved itself "The Champ" in toughness, durability and resistance to abrasion, acids, humidity, salt spray and other destructive forces.

For boats, station wagons, buildings, and wherever a surface is exposed to severe conditions, we suggest this better, longer lasting clear varnish.

Meet "The Champ" in person at the New York Motor Boat Show, Jan. 9-17, the Chicago Boat Show, Jan. 31-Feb. 8 or send for his biography—an interesting booklet on "1000 SPAR".

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NEW YORK CHICAGO

the larger areas of rich dark color. For example, sap walnut is almost white in contrast to the brown heartwood. To discard all sap walnut or veneer would be very expensive—practically prohibitive, in fact—so these areas need a special stain treatment before application of the overall body stain. Also, where the different pieces in a large panel may be of widely varying colors, pigment wiping stains may be used to produce a more uniform color.

The third function of stains is to produce imitations of more costly cabinet wood colors on woods that have no desirable color or figure. Thus, a "mahogany bed" may have tupelo, poplar, or white gum posts, stretchers and rails which are almost white, in contrast to the rich brownish-red color of the genuine mahogany panels. These light colored surfaces must receive more stain, or must be shaded with special shading stains to produce an acceptably uniform color throughout. Butternut or birch may be stained to produce good imitations of black walnut; prima vera may be stained to imitate mahogany; poplar, tupelo and white gum may be stained to imitate maple, walnut, mahogany.

Materials From Which Stains For Wood Are Made

Several different materials have been used for staining woods. The first materials were natural dyes and color chemicals which reacted upon the wood or upon each other to produce the desired color. These natural and chemical stains are no longer widely used because they are corrosive, not always dependable, and difficult to control. They have been almost entirely displaced by stains based upon coal-tar dyes which are lightfast, dependable, convenient, and available in any hue desired. In addition to the dye-base stains there are pigment wiping stains and various specialty stains.

Excellent modern wood stains are made from carefully selected and standardized coal-tar dyes. These are usually acid or direct colors. For staining wood they are used in several ways.

Water stains are made by dissolving these dyes in water. Water-soluble dyes are marketed in powder form, to be dissolved by the user in hot water. They may be sold as individual colors, such as yellow, orange, red, brown and black. The user can make almost any color he desires by using yellow, red and black (usually blue-black) in the proper porportions. Sometimes it is more convenient to use a standard orange or brown as the main base, using small quantities of yellow, red or black to get the exact shade desired.

Stain powders may be purchased already blended to the desired color, the user having only to dissolve the powder in water, with a minimum of measuring. Some water-soluble stain powders are soluble only in water. Others are also soluble in alcohol. The supplier should be consulted on this point.

Water Stains; Their Merits And Other Characteristics

Water stains should always be mixed in hot water, and in glass, earthenware or vitreous enameled container. The use of a metal container may cause the color to change in a short time. From ¼-oz. to 8, 10 or 12-oz. by weight per gallon of water are the usual proportions, depending upon the depth of color desired. Sometimes half or more of the water may be replaced by alcohol, which will speed up the drying and minimize the grain-raising (roughening of the wood by water). Also, the stain powder may be dissolved in a small quantity of hot water, and the solution diluted to the required concentration with special water-miscible non-grain-raising solvents which the supplier

STAINS

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No finish can succeed without perfect handling of the Stain question. The Stain is down where the business of producing the perfect wood finish begins.

STILLE-YOUNG service will work out for you the exact type and color of Stain needed for your particular process.

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Oil Pigments
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We will match all colors, or produce any special shade.

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Our long list of standard items may contain **exactly** what you require. But if not, we'll formulate it for **your special process.**

can furnish. This stain mix produces a minimum of grain-raising and the maximum of drying speed. Not all stain powders may be used in this manner; the supplier should be consulted on this point.

For best results with water stains the wood should first of all be sponged with water and allowed to dry for four to eight hours. The surface is sanded. Then the stain is applied. This minimizes the roughening effect (grain-raising) of the water stain. After the stain is dry (4 to 18 hours) the surface is wash coated and again carefully sanded. With care, the initial sponging of the wood may be eliminated, but the stained and wash coated surface always requires considerable sanding before filling. Where large porportions of alcohol or water-miscible non-grain-raising solvents are used as just described, little or no sandng is required. The drying time of stain made of these solvents may be as little as two hours or even less.

Water stains are best applied by spraying (30-lb. air pressure) or dipping. Brushing may be satisfactory on small areas, as in sap staining. The usual practice is to apply the stain and then allow the surface time to dry. For a more even tone, however, some finishers prefer to apply a very wet coat, and while the surface is still wet, they wipe or blend out the stain with cotton cloths.

Certain light-fast dyes are soluble in such non-aqueous solvents as Carbitol, Cellosolve, ketones, glycols, and alcohols. These dyes are the basis of some of the non-grain-raising or so-called "permanent" stains. These stains are patented. They are widely-used in factories that produce good quality furniture. They have all the light-fastness of water stains. In addition, they do not raise or roughen the wood grain. Their use almost entirely eliminates the sanding which is necessary to smooth up the surface-roughening effect of water stains. Also, a drying time of 30 minutes or less, at room temperature, is generally satisfactory for these stains.

Non-Grain-Raising Stains Now Widely Used

Non-grain-raising stains are marketed ready for use, or they may be purchased as concentrated liquid colors such as yellow, orange, red, black and brown. These color bases may be blended by the user in the proper proportions and reduced to the desired strength with non-grain-raising solvent mixtures furnished by the supplier. The merit of this procedure is that any color may be produced from three or four stock color bases.

These stains are applied just like water stains, except that brushing is even more difficult because of their rapid drying. Wiping is seldom done with these stains. They can be mixed in and used from ordinary metal containers.

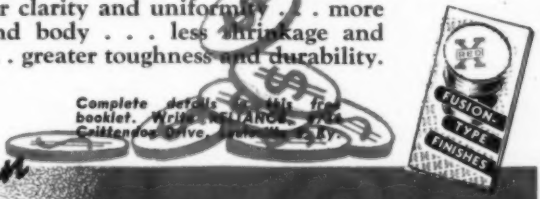
Spirit stains are supplied in powder form, and are dissolved in alcohol by the user. Some spirit stains are also soluble in water. They are almost always made from basic dyestuffs, which are brilliant but also fugitive (subject to fading in light, especially sunlight). Some of these stains will show marked fading in one hour in the sunlight. In general, they are not suitable for high quality furniture . . . they have limited use.

Penetrating Oil Stains and Pigment Wiping Stains

Some dyes are soluble in oils and such solvents as benzol, toluol, xylol, turpentine and petroleum solvents. These are called oil dyes. They are usually soluble in alcohol, also. Oil dyes are more light-fast than the basic dyes used in most spirit stains, but less effective in this respect than the best acid and direct types used in water and non-grain-raising stains. Oil-soluble stains are marketed as

RED X FUSION TYPE FINISHES

eliminate the necessity of costly ovens and lengthy conveyors, save floor space and make it possible to go from raw wood to finish coat in about one hour without the application of heat. With RED X you can recoat immediately or at any subsequent time. Each application from stain to final coat fuses with preceding or succeeding application . . . resulting in better color clarity and uniformity . . . more fullness and body . . . less shrinkage and swelling . . . greater toughness and durability.



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powders or in liquid form. Liquid oil stains are usually called penetrating oil stains, and contain up to 32-oz. avdp. of dye per gallon of solvent. They may also contain asphaltum or gilsonite.

Penetrating oil stains find limited use in finishing fine furniture because of their lack of light-fastness and their tendency to bleed into varnishes, lacquers and other topcoats. However, they dry rapidly (30 to 60 minutes at room temperature) and do not raise the grain. They are usually applied by spraying or dipping; they do not brush on very well.

How Finishers Can Use Pigment Wiping Stains

Pigment wiping stains, or "pigment oil stains", as they are sometimes called, are used in large volume in the furniture industry. These stains are made from translucent color pigments well ground into drying oil or varnish vehicles. Sometimes they also contain asphaltum, gilsonite and small amounts of oil-soluble dyes. They show little tendency to bleed unless they contain relatively large amounts of oil dyes. They are light-fast unless they consist largely of oil dyes.

As their name implies, they require wiping to develop their true color and transparency. They are easy to apply. Spraying, dipping brushing or just swabbing on with a cotton rag are equally satisfactory. After application they are allowed to set from two or three to 30 minutes; then they are blended out with rags dampened with stain, or with brushes. They are not usually wiped off clean, because the color would then be too light. If highlighting (light or dark edges or other areas) is desired, the stain is simply wiped cleaner at these places. Sometimes, for a deeper or more uniform color, a toner (see further along) is first applied, followed by the pigment stain. Also, if local areas require darkening, more pigment stain may be applied by fogging on a very light coat by spraying.

Normal drying time is 4 to 15 hours at room temperature, or 30 to 60 minutes at 120° to 140° F. Some new pigment stains may be coated over with lacquer or varnish immediately after wiping. The supplier should be consulted on this point.

Pigment wiping stains are not as transparent and do not develop the grain pattern as effectively as the dye-base stains. For this reason they are generally used to imitate maple, walnut, and mahogany colors on plain, unfigured woods. They are seldom used on fine cabinet woods. These stains have what is called a uniforming effect; that is, if a panel is made of several pieces of wood of different colors, a pigment wiping stain tends to produce a more uniform color, whereas dye-base stains are often unsuitable to imitate walnut and mahogany finishes on poplar, tupelo and white gum. This is especially true if the woods are not straight-grained and have some end grain exposed. On these areas the dye-base stains will develop dark, unsightly spots.

Sap Stains; Trim Stains Shading Stains; Toners

A number of other specialized stains are used in industrial furniture finishing. For example, sap stains are used on the sapwood of cabinet woods where the heartwood differs markedly in color from the sapwood, as in walnut and eastern red cedar. Sap stains are applied first of all, before the main or body stain is applied. Water, non-grain-raising and pigment wiping stains, applied by spraying or brushing, are used in most furniture factories. Their object is, of course, to produce a uniform color free of obvious sap (light) streaks.

Trim stains are of the same type and are used on light-colored trim

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woods (maple, birch, poplar, tupelo, etc.) to make them match the darker panels, or to produce a color contrast.

Shading stains are used for the same purpose as trim stains. They usually consist of a thin lacquer containing dyes or small amounts of transparent color pigments. They are applied by spraying only (20-lbs. air pressure) either over the filler or over the first or sealer coat. Drying time may be two to ten minutes. Care should be exercised to avoid using too much shading stain, because it may spoil the transparency of the finish. Only the minimum needed to deepen the color or to do the highlighting should be used. Highlighting on a panel may be done by spraying a very little shading stain all around the edges, leaving the center somewhat lighter in color.

Transparent toners are similar to shading stains in composition, but contain less color and are used for a different purpose. They are used to produce a background of uniform color, and so are applied over the entire piece. They may be used as a wash coat before filling; as a sealer under pigment wiping stains or glazing stains; over the filler; or over the sealer to produce a deeper more uniform color. If they contain enough solids (10% to 20%) and sanding agents, they may be used as colored sealers. In fact, they are sometimes used as the only coloring material in low-priced work, followed by a coat or two of varnish or lacquer. Drying time is 30 to 60 minutes. Toners are usually sanded smooth before other materials are applied—but not always.

Sometimes toners are made with hiding pigments to partly or completely obscure the wood. Thus, the color variations in wood of low quality may be evened up to some extent by applying a very thin coat of a lacquer enamel (of suitable color) reduced to a thin consistency. The coating only partially hides the wood. Application of pigment wiping stains over such a toner develops the desired color. The finished effect is to produce a uniform-colored background with most of the grain pattern showing through.

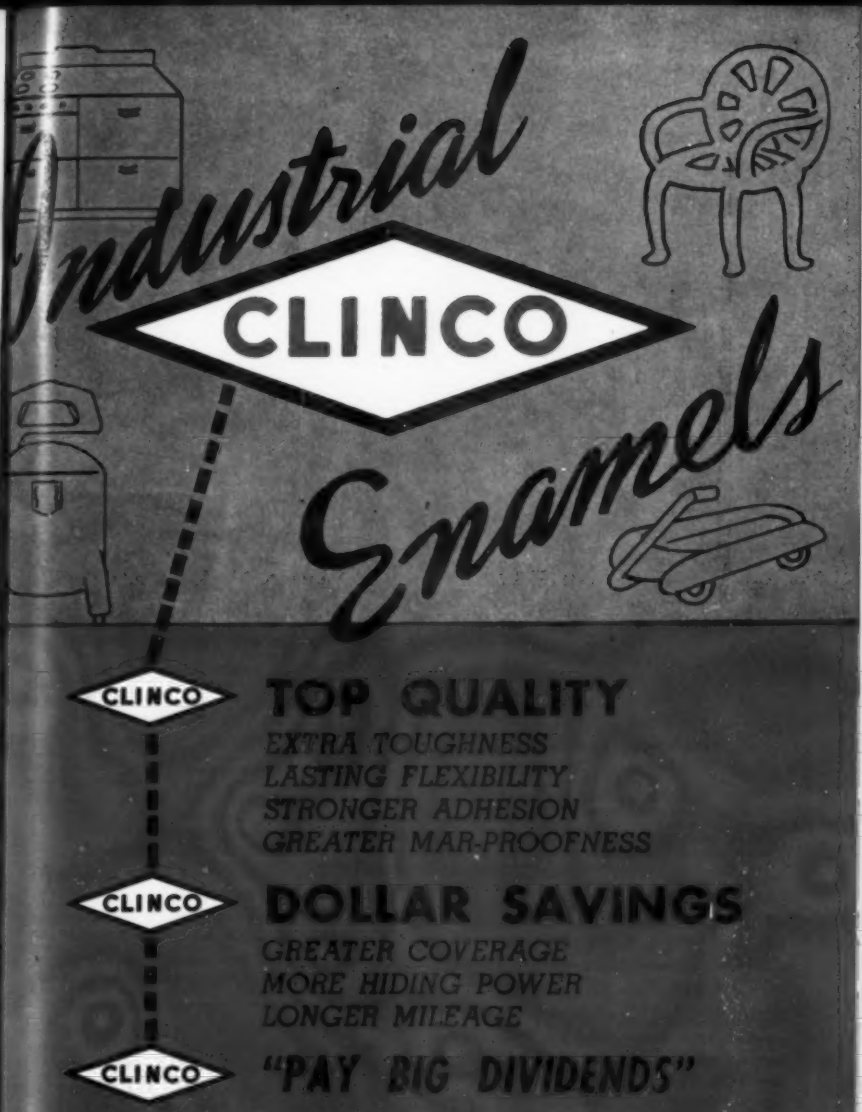
Toners that completely hide (ground coats) are used in graining processes to produce imitation walnut, mahogany and other finishes. Care must be exercised to avoid using too much toner, unless it is for a ground coat; or an artificial "painted look" will result. Sometimes translucent toners are used to cover mineral streaks in maple. Drying time of all toners is 30 to 60 minutes.

Glazes and How to Use Them Effectively

Glazes, or wiping glazes, are similar in all respects to pigment wiping stains, except that they are made to dry more slowly to permit more time for wiping or blending with a brush. They are applied over glazing sealers or lacquer sealers to deepen the color and to leave highlighted effects where required. They are sprayed on, wiped out with a rag, and then blended out with a soft-bristle brush. The process is slow and requires considerable skill, therefore glazing is less popular in commercial furniture finishing.

In highlighting, the glaze is worked out with the brush until it is deeper where desired. Care must be exercised to leave only the minimum amount of glazing stain on the surface; otherwise the transparency and depth will suffer. Normal drying time is 30 minutes to 15 hours at room temperature, although some new materials may be coated at once. Shellac makes a satisfactory glazing sealer because the solvents affect it less than other sealers, making possible a cleaner, clearer color, as well as giving better blending properties.

(To be continued)



The CLINTON COMPANY

1210 ELSTON AVENUE • CHICAGO 22 • ILLINOIS

Coating and Printing Machine for Small Aluminum Cylinders

Could you put us in touch with manufacturers of machines which enamel coat and print lettering on drawn aluminum cylinders, similar to the process used on tooth paste tubes? We are interested in finishing 8,000,000 shells per year, about 1¼-in. in diameter, and 2-in. high, on the side walls only.—K.Co.

Try Charles Wágner Litho Machinery Co., 55 Park Ave., Hoboken, N. J., or Rutherford Machinery Co., 100 6th Ave., New York, N. Y.—ED.

Technical Consultant on Finishing Wanted

We are confronted by problems pertaining to our paint department, and wonder whether you could place us in touch with a technical consultant familiar with all methods of application, as well as the theory and know-how of recommending way and means of improving our production schedule?

This thought has occurred to us, since a great portion of your advertising deals with problems of this nature, which perhaps may bring about the exact contact we are attempting to make.—W.B.Co.

In a letter we are naming a few men, any one of whom might be interested in serving you.—ED.

We Supply Wiping Rag Service

We have just received a letter from our manufacturers of wiping towels in New York, along with a copy of a letter sent them by Midwest Service, Inc., stating that you have plants in Milwaukee and Two Rivers, Wisc., and that said plants may be interested in our service.

We would appreciate your advising us where these plants are and if we could be of any service to them. We now are servicing printers and lithographing plants throughout the state and if your places here are of a manufacturing type we could be of great assistance to you.—INDUSTRIAL SERVICE CO., 5522 W. Grant St., West Allis, Milwaukee, Wisc.

In a letter we enclose a marked tear sheet (page 78) from November issue which contains an inquiry for "Wiping Rag Service." This inquiry came from Hamilton Mfg. Co. (Attn: J. P. Everson, Asst. Pur. Agt.), Two Rivers, Wisc. We suggest that you contact this company, as we feel sure that they will want the service you have to offer.—ED.

Gold and Silver Paint

Please advise me where I may get gold and silver paint or lacquer, such as is used on plastic costume jewelry. This paint does not seem to contain any metallic bronze powders, and the film it makes looks like an electroplated surface.—A. G.S.

In a letter we are suggesting the names of a few concerns that may be able to supply you.—ED.

Pumps for Paints, Solvents

We would appreciate receiving names and addresses of manufacturers of pumps which are capable of pumping paints and solvents.—J.J. Co. (Chicago).

In your city there is Industrial Filter & Pump Mfg. Co., 1621 W. Carroll Ave. Elsewhere, we suggest Viking Pump Co., Cedar Falls, Iowa, and Worthington Pump & Machinery Corp., Harrison, N. J.—ED.

Finishing Wood Products

We are concerned with the finishing of wood to the greatest degree, and have four variety-lathe turning plants whose problems are those of tumbling, spraying and dipping. We also color dowels and broom and mop handles, but they are no problem, as they are relatively simple. We want to ask information about several things in the November issue and would like for you to answer them one at a time and specifically.

Referring to the article on croquet balls and dip coating (Nov. 1947 issue, pages 30, 31 and 32) could we receive the name of the manufacturer of these balls who asked about this coating? We make these balls and would like to supply them, as we know that no firm in the country makes enough for their own use and there are only about three or four in the whole country that make them.

We also would like to know the six suggestions that were sent in by six different firms as to how to color the balls.

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LIQUID ENVELOPE

PEELABLE PROTECTIVE PLASTIC FILM

SPRAY-BOOTH COATING

Spray it on

Peel it off

A CLEAN BOOTH IN MINUTES!

Product of America's longest and broadest experience in making *peelable* plastic films. Now used by hundreds of important plants. Quick-drying. Not a soap or emulsion. Does not rely on overspray to form a film. Peels easily no matter how heavy or light the overspray at any point in booth. White color improves booth illumination. Film non-combustible.

TEST-SAMPLE OFFER

5 gallon can, shipped prepaid on a money-back guarantee $17.50, complete with instructions and attractive low prices on quantity re-orders.

Many cheap imitations of genuine "LIQUID ENVELOPE" are being rushed onto the market by inexperienced producers. For assured satisfaction, be sure to get the original and genuine "LIQUID ENVELOPE" made only by

BETTER FINISHES AND COATINGS, INC.

274 Doremus Ave., Newark 5, N. J.
122 E. 7th St., Los Angeles 14, Cal.

although your article provides the greatest amount of technical information that could be had and we doubt if even the finishers could supply it in the manner in which you have. We have not yet concerned ourselves with coloring these large diameter balls, but will soon.

Second, is the name of some firms who make tumbling barrels for tumbling wood turnings, as per article on "Tumble Finishing Toys" (Nov. 1947, pages 71 and 72).

The third thing we would like to know is the name of the firm who asked about dipping play pens in "Letters from Readers" department, page 78 of Nov. issue. We sell wood dowels, wood moulding, and wood turnings that go into these play pens, to several firms making them now, and would like to supply this firm if we could solicit any business from them.—CHICAGO WOOD & PLASTIC PRODUCTS CO.

The concern that first asked about the finishing of croquet balls and mallets is Gulf Industries, Inc. (Attn: Wm. G. Austin, Jr.), P. O. Box 1555, Mobile 17, Ala. This letter was written in November 1946. In December 1946 issue, we published the company's question and answer to same from several different authorities. Tear sheets of this Question and Answer are being sent to you by letter.

Regarding concerns that can supply tumbling barrels, you have one right in your city—H. M. Kenyon & Co., 9 S. Clinton St., Chicago 6, Ill. We feel sure that this concern can take care of your requirements.—ED.

Metallic Silver Coating

We are interested in obtaining any information possible on a silver paint that can be applied by brush or dipping, and cured to give a coating of metallic silver at or below 300° F., with low-electrical resistance. We understand that such coating materials are available, but have never seen them advertised. We would appreciate any information you might be able to give us on this problem.—B.M.I.

Who can supply this material?—ED.

Thank You

We wish to thank you very much for your letter of November 17th, regarding different finishes for veneer. The limed walnut finish has turned out very nice and we believe the others will be the same. It was very kind of you to go to the trouble of obtaining this information for us. We thank you very, very much.—ARMON & SON FURNITURE MFG.

Sprayed Plated Finish

Will you please send us the name of the company that controls the process of "Chemical Plating" or sprayed plated finish? We would also appreciate any information relative to getting a finish that looks like electroplating, but that is sprayed on.

On page 102 of May issue of INDUSTRIAL FINISHING, this information was requested by another firm, and later, in July issue on page 92, the same request was made, at which time the Editor's Note stated, "Information sent."—B.E.Co.

We believe that what you refer to is a product of Maas & Waldstein Co., Newark 4, N.J.—ED.

Felt-Lined Rack Interests Us

In the November issue of INDUSTRIAL FINISHING, page 44, you ran a picture of a felt-lined multiple rack for finishing parts. Our client, the Felt Association is interested in all uses of felt.

We would appreciate it if you could lend us the photo of the rack for possible use in a future issue of "Felt Facts" bulletin, our regular news sheet which is sent to members of the Association and several thousand executives and personnel in the felt and allied industries. If we use your photo we will naturally print a credit to you in a courtesy line.—KORBEL & COLWELL, INC., (Public Relations Consultants).

Photograph sent.—ED.

Airplane Varnish and Birch Plugs

I would be most grateful for information as to where I may purchase airplane varnish. Also, where can I get maple or birch plugs used on maple furniture to cover screw holes?—C.F.Co.

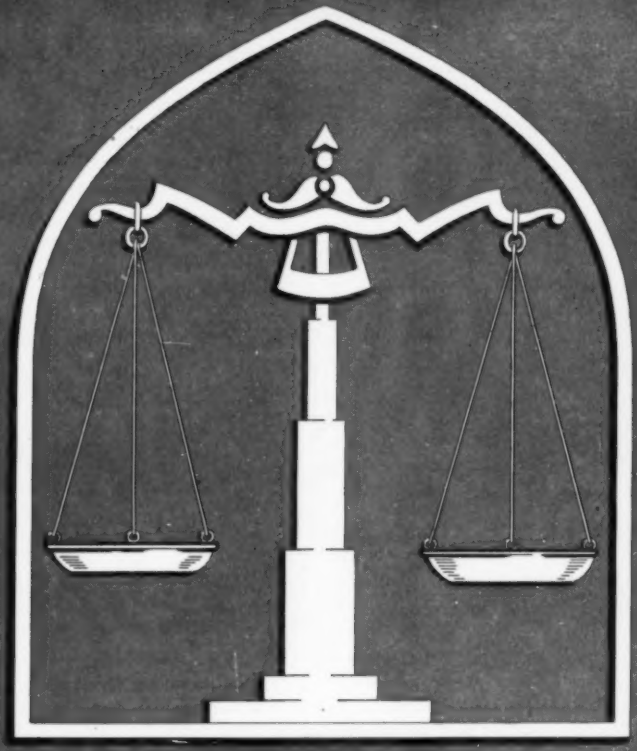
In a letter we are suggesting the names of several concerns who we believe can supply you.—ED.

Can Coat Bobby Pins

In reference to the inquiry about coating bobby pins (page 82, Nov. 1947 issue) we would like to tell you that we are engaged in coating a similar article with a baked enamel, with very good success. Maybe we could be of assistance to the concern making this inquiry. We would certainly be glad to submit samples and we believe that our price will be in line. — PYRAMID INDUSTRIAL FINISHING CO., Bronx, 55, N. Y.

Have Used "Duro Seal"

In the November 1947 issue of INDUSTRIAL FINISHING, page 78, we notice that you have a question entitled, "Who Makes Duro Seal?" It so happens that we have used Duro Seal on some of our pipe organ work and therefore are well ac-



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Enamels - Stains - Fillers

RESINS & GRINDING LIQUIDS

"Syntex" Alkyds - Special Resins

Varnishes - Grinding Liquids

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quainted with it. On the container we notice that Duro Seal is made by the International Chemical Co., 3140 S. Canal St., Chicago, Ill.

We trust that this information will be valuable to both your reader and yourselves. Incidentally, we always look forward to receipt of INDUSTRIAL FINISHING with a great deal of interest and anticipation.—WICKS ORGAN CO.

"Phenoplast" Again

On page 82, of November 1947 issue of INDUSTRIAL FINISHING Magazine, there is reference made to a "Phenoplast Coats Plastic" article. The name of the manufacturer making this product is Lockrey Plastic Products Co. Would you kindly give us their address?—W. MFG. CORP.

Address of Lockrey Plastic Products Co. is 40-16 150th St., Flushing, N. Y.—ED.

Flock Finishing

If you have previous issues of INDUSTRIAL FINISHING that deal with flocking or flock coating on any materials, we would be pleased to have copies of same. We are also interested in articles dealing with adhesives used in connection with flock coating.—FLOCK FINISHED PRODUCTS CO.

I have been tracking down some special information on flocking vinyl chloride film and sheeting—and for some discussion of this flocked material I drove to B————, Ohio to talk with Mr. C. C., President of C————Products, Inc.

While waiting for Mr. C. C. in the company's reception room, I picked up a copy of INDUSTRIAL FINISHING Magazine — about the September issue, I believe. I had just reached a full-page advertisement of some flock or flocking firm, when Mr. C. C. called for me, and I failed to pick up the magazine when I left the office.

On my return home I referred to my 1948 copy of Industrial Marketing's Market Data Book, and find your magazine listed on page 367. I failed to make careful note of the magazine I saw at B——, Ohio, but I think yours is the one.

Now, if you have carried some articles recently on flocking, and particularly on flocking of plastics, can you loan me tear sheet for a few days? Or if you can spare a copy of that September issue, I'll appreciate the loan.

Frankly, I never thought of my particular interest in flocked vinyl as coming under the heading of finishes, but for most uses, I see now that is the correct classification.—C.M.

This is the magazine to which you refer. Under separate cover, we are sending you a copy of September issue. We trust that it will reach you promptly and in good condition. Also, in a letter we are sending you tear sheets of one of the several articles we have published about Flock Finishing. There has been such a demand for tear sheets of these articles that our supply is now just about exhausted.

Manufacturers of flock who have advertised in INDUSTRIAL FINISHING Magazine are named in our letter to you.—ED.

Stains Wanted

Will you please send us a list of manufacturers of powdered analine stains who may be able to supply us with alcohol and oil-soluble powdered stain materials? —A. C. & B. Co.

In a letter we are naming a few concerns who may be able to supply what you want.—ED.

Striping Tool

On page 80, of August 1947 issue of your publication, there appears an illustration of an edge striping machine. We are eager to get one of these and will be pleased if you will kindly put us in touch with the manufacturer.—British Agencies, Ltd., (Johannesburg, South Africa).

It is a product of Paasche Airbrush Co., 1909 Diversey Parkway, Chicago 14, Ill. —ED.

Lacquers; McFadden

Can you supply me with the correct name and address of a company in Philadelphia manufacturing colored lacquers—a company by the name of McFadden or some name similar to that?—P.W.B.

The concern you refer to is probably Lawrence-McFadden Co., 7430 State Rd., Philadelphia 36, Penna.—ED.

Color Therapy

Will you kindly advise us where we can obtain information and technical data on "Color Therapy" and its application to Food Stores. Our customers are largely Super Market operators and we should like information that can be passed on to them.—W.L.G. (Food Industry Merchandising Engineer).

Try any of the nationally known manufacturers of finishing materials that you see advertising in this magazine.—ED.

Safe Enamels for Toys

In the "Letters from Readers", of Nov., 1947 issue, you state that you are sending the T.E.Co. a list of manufacturers who

"It's no use, Digby! S-I-P CLEEN-UP Polish takes off every finger print!"

S-I-P CLEEN-UP POLISH

- **Saves time and labor—just "wipe it on and wipe it off."**
- **Removes finger marks, rubbing compound, dust and lint.**
- **Leaves no film or streaks—contains no harmful solvents.**
- **Works faster, goes farther, makes any finish look better.**

Add greater sales appeal to your products. Bring out the full beauty of the finish by using S-I-P CLEEN-UP Polish. Made and guaranteed by the makers of the famous WEAR MASTER Finishes.

SAMPLE FREE!

TRY IT FREE . . SEND COUPON OR WRITE

STANDARD INDUSTRIAL PRODUCTS, INC.

Wear Master Finish

EVANSVILLE 4, INDIANA

YES, We'll Try
S-I-P CLEEN-UP POLISH
Send Free Sample. No Obligation.

Name_____

Address_____

City_____

State_____

make safe enamels for toys. We would appreciate the same list.—WESTERN ALLIED PRODUCTS CO.

List is being sent.—ED.

We Supply "Softone" Finish

Referring to the inquiry entitled, "Who Makes 'Softone' Finish", as published on page 46 of Dec. 1947 issue, we have matches on "softone" finish and are at present enjoying some of this business with members of the Wood Office Furniture Institute. The finishing procedure on oak is as follows:

1) Stain, using a permanent non-grain raising type of stain.

2) Size coat with water-white lacquer sealer cut in the ratio of one part sealer to three parts of lacquer reducer.

3) Sand with fine sandpaper.

4) Fill with new process filler (4-hour type filler).

5) Apply one coat of water-white sealer.

6) Sand with fine sandpaper.

7) Apply one coat of water-white gloss lacquer.

8) Apply second coat of water-white gloss lacquer.

9) Rub.

You will notice that we have not supplied code identifications to the materials mentioned here, since we have found that colors of stains and fillers must vary to conform with the type of oak the manufacturer has in stock.

It has been our practice, with present customers on this "softone" finish, to have them supply us with representative samples of the type of oak they intend to use. We then proceed to vary the formula on both the stain and filler to secure our "softone" match.

We hope that this information is sufficient for your requirements. — C. W. QUEISSER, Advance Paint Co.

New Executive Positions Created at Zapon

Mr. E. H. Bucy, general manager of the Cellulose Products Department of Atlas Powder Co., announced the creation of several new executive positions at the company's Stamford, Conn., plant.

Mr. J. M. Howard has been named to the recently created post of general manager of the Industrial Finishes Division.

Mr. Howard, an employe of the Zapon Division for many years, formerly held the position of Director of Sales. In this new capacity he will have full responsibility for the Technical and Production Departments, as well as supervision of all sales activities.

At the same time Mr. Bucy also announced that Mr. D. A. Metz, formerly assistant director of sales, has been made

J. M. Howard becomes General Manager of the Industrial Finishes Division for Zapon Div'n of Atlas Powder Co.

assistant general manager of the Stamford Zapon Division, and Mr. K. R. Longnecker becomes sales administrator of this Division.

Wyandotte Chemicals Advances Weller to Research Director

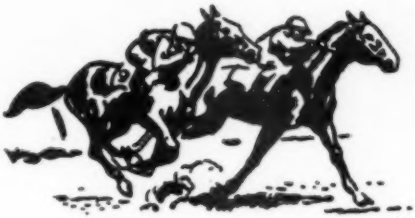
Paul Weller has been appointed Director of Market Research of Wyandotte Chemicals Corp., Wyandotte, Mich.

Mr. C. B. Robinson, Vice President in charge of sales, J. B. Ford Divn. declares: "Wyandotte Chemicals predicated their now rapidly progressing $25,000,000 expansion program on extensive market research. We know that Paul Weller, who has been directing work of the department since last March, will successfully expand these activities. His department is now conducting a detailed study of the sales potentials for the many industries served by the Ford Division. This work will give, I believe, a complete analysis of our markets in all sections of the country."

Paul Weller is now Director of Market Research for Wyandotte Chemicals Corp.

Under Mr. Weller's direction the charting of trends and forecasts for the industries using specialized alkalies, cleaning and washing compounds is being greatly expanded for the 16 major industries served by Wyandotte Chemicals.

Where speed is essential . . .



RAPIDRY FILLER

is a triumph of speed and efficiency. Whenever the woodworking industry requires quality, plus quick preparation, for finished surfaces, RAPIDRY FILLER is a "must". It fulfills all the functions of conventional oil fillers—but dries and prepares surfaces for perfect bonding of the finished coat within a half hour. RAPIDRY FILLER needs no special thinner—fills thoroughly—and cuts costs due to savings in time and handling. It is a tried and proven product, especially desirable where mass production conditions are a prime factor and speed is wholly essential.

In the home and elsewhere, SPRUANCE QUALITY products are to be found as a finish on furniture, radio cabinets and many items in constant use.

■

THE GILBERT SPRUANCE CO.

RICHMOND AND TIOGA STREETS

Philadelphia 34, Pa.

Front of the new West Coast branch of H. Behlen & Bro., Inc., in Santa Monica, Calif.

A Coast to Coast Service of Everything for Woodfinishing

H. Behlen & Bro., Inc., of 10 Christopher St., New York 14, N. Y., one of the oldest manufacturers and distributors of wood finishing and paint materials, has established a new 11,000-sq.ft. warehouse, factory, sales office and retail store at 1749 Berkeley St., Santa Monica, Calif. Behlen offers a complete line of wood finishing and paint supplies to the finishing industry.

This new West Coast branch is fully equipped to be self sufficient and independent in all respects of its eastern counterpart. It includes modern manufacturing and processing facilities of Behlen's products and is also sales agent for Qualatone Products, Inc., Monarch Lacquer Corp. and Patty Remover & Chemical Co. A complete stock of Schrell & Brock drawing materials and architect's supplies is carried in this branch. Stocks are readily available and can be delivered immediately.

Since 1888 Behlen has been a pioneer in producing and distributing new materials and methods to the wood finishing industry. Behlen was first to introduce steelwool in this country.

A complete stock of finishing materials.

Behlen has recently published a complete modern brush manual, containing full-page pictures with detailed descriptions, uses and specifications of over 200 brushes necessary in the wood finishing industry.

Mr. Carl Behlen, secretary of the corporation, is in charge of the Santa Monica, Calif. branch. His many years of experience in the industry is of great value to those customers requiring technical information. Mr. John Dagget is general sales manager. His entire time will be devoted to sales promotion and customer service.

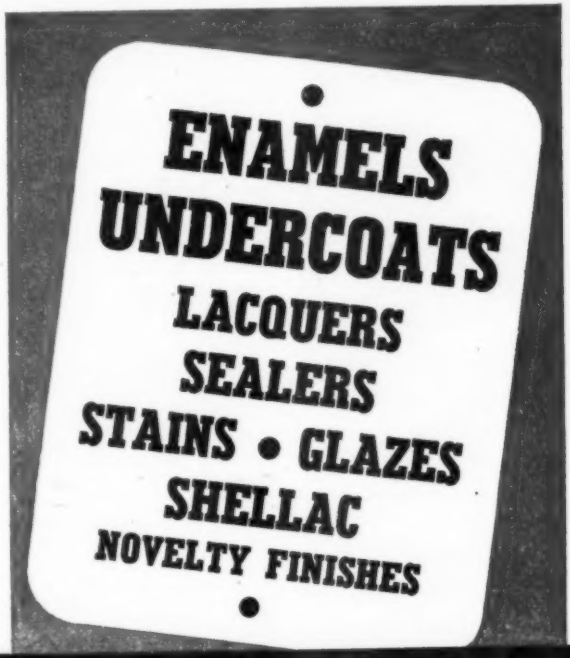
New Book on Resins

U. S. Industrial Chemicals, Inc., New York, has released the first comprehensive edition of U.S.I. "Resinews" prepared since the start of World War II.

Although some of the basic raw materials for resins are still in short supply, U.S.I. points out that a number of them are once again available. This condition has permitted the company to return to the manufacture of many of its prewar resins. These, as well as the resins developed during the war years, are included in "Resinews," considered by the company to be the most comprehensive publication on resin products in the field.

In the preface to the 146-page illustrated book, the company said it has combed its line of resins to eliminate grades which either show no advantage or are inferior to standard types. This was done in an effort to standardize the grades of U.S.I. resins which trade usage has indicated to be the best for each purpose.

"Resinews" is tab-indexed in a new arrangement to permit easier access to information. It consists of 11 sections.



IN STEP WITH THE TIMES

Industrial Finishes

that make the most of available raw materials to give you greatest durability, together with attractive appearance and economy.

• FOR APPLICATION BY ALL METHODS

JAMES B. DAY & CO., CHICAGO

Prevent Paint Blistering on Aluminum Castings

We understand there is a certain chemical used in a cold dip process to prevent sand-cast aluminum from blistering an organic coating under the normal enamel baking process. We are eager to know the name of the chemical and the source of supply for same.—A.F.Co.

At different times I have tested materials designed to prevent blistering of aluminum sand castings, but have not found anything I would recommend.

One coating manufactured by Plastic Lining Corp., Chicago, Ill., has sufficient elasticity to hold a baking finish, and flatten out upon cooling, but it does not prevent the aluminum film from blistering.

It is natural for the air pockets in aluminum (porosity) to swell and blister under heat. It is not the paint; it's the casting itself that is to blame.

The best method of overcoming this condition is to sand-blast the casting or, if small enough, tumbling in a ball mill will do the trick. The object is to hammer with the abrasive or balls, the surface of the castings to either break these air pockets, or to form a heavier surface of aluminum over the surface porosity. Or the simple cure would be use an air-dry material. — WM. BEACHAM, Crystal Laboratories.

Force Drying Filler in Furniture Finishing

We are finishing our furniture on a conveyor. The time cycle of the filler oven is 90 minutes. The filler oven is themostatically controlled, and has both a thermostatically controlled wet bulb, and a thermostatically controlled dry bulb.

We are experiencing difficulties in our drying. Kindly advise us what you would consider the proper temperature of heat, and also the proper amount of relative humidity. — C. Furn. Co.

I would suggest a temperature of 95° F. at the oven entrance, but the temperature should increase and reach a top heat of 150° F. in 15 minutes, with a relative humidity of 25% to 30%.

It is best for filled work to enter the oven at a low temperature, so as to allow the filler solvents to evaporate before the resins "set." This can be done if the oven is baffled, so that the section where the furniture enters is not as high in heat as the remainder of the oven—and, of course, the humidity will be in proportion to the heat also. Too high heat, applied too soon, will often "caseharden" or dry the filler on top and trap some of the filler solvents underneath, thus retarding complete drying of the filler.

The schedule I suggest here is based upon the use of an oven with a cycle of 90 minutes and a cooling period of 30 minutes between the filler oven and the place where the first coat of sealer is put on. Of course, the cooling period can be shortened by using a tunnel equipped with fans

GARMENT HANGERS

"TAILORED" WITH *Claremont Flock*

ACHIEVE THAT CUSTOM LOOK!

A Well-Suited Combination of Aluminum and Flock

Light-weight, aluminum suit and coat hangers, finished with an all-over surface coating of colorful Claremont Flock, attain that "New Look"... possess greater sales appeal.

Available in 18 assorted shades and colors, Claremont Flock is quickly and economically applied to any shape or surface. For the answer to your finishing needs, we suggest you check the possibilities of Claremont Flock (cotton, rayon, wool). Inquiries invited!

Used decoratively on packages, bottles, displays, etc., or as protective finishes and insulation on industrial products . . . CLAREMONT FLOCK offers many advantages!

CLAREMONT WASTE MFG. CO. NEW HAMPSHIRE

The Country's Largest Manufacturer of Flock

to accelerate the cooling of the filler and the surfaces to which it has been applied.

The cooling of filler and filled surfaces after leaving the oven is very important, as sealer applied over hot filler will not only cause the filler to lift but it may cause small pimples or blisters to appear in the sealer coat. Often it causes gray pores too. Of course, I am assuming that you are using a filler that is especially formulated for forced drying, and that you are using a high grade naphtha or a high grade white gasoline for thinning your filler.—H. W. CHESTER.

How Do We Train New Finishing Foremen?

We are writing you to ask whether you would be good enough to give us some advice relative to the training of a finishing superintendent. We have in mind taking into our employ a young man about 28 years old and training him to become a finishing foreman. We believe he is a very intelligent man, having had some college education and having held a commission in the Army Air Force. He has never had a spray gun in his hands and knows absolutely nothing about paint.

In order that we may get full benefit of this man and give him a good start when he takes up his duties with us, we are contemplating the possibility of giving him an opportunity to get a real honest-to-goodness training in all phases of finishing. We feel that we could accomplish more this way than to hire a finishing foreman, inasmuch as our experience with finishing foremen, ever since I can remember, has been mighty poor.

Would you be good enough to give us your views on what you would consider a good training program and how long it would take? It is our intention to start this man as soon after the first of the year as possible. —X. Corp.

You are to be commended in the approach you are taking to your problem. It is true that a good finishing superintendent becomes more valuable as his years of experience and knowledge of finishing increases. On the other hand there are many finishing superintendents — just as there are many other persons in other occupations — who fail to grow mentally and ability-wise with their years. As a result they don't know much if any more about finishing after 20 years of experience than they did after five years. One can't learn the finishing business over night, but if a man is the right type of person he can make good headway and get an overall picture of what it's all about in four to six weeks.

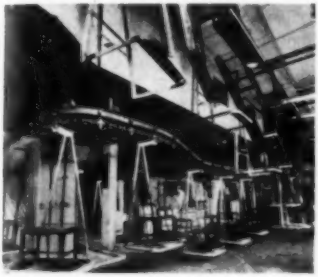
In teaching the finishing business to this new man, the first and most important thing is to teach him the A, B, C's about different types of paint products. He must know, for example, about stains. What are the different types of stains? Why does a finisher sometimes use a NGR stain and other times a pigment wiping stain?

Do all stains need the same length of time to dry? Do they all cost the same? Do you use the same method of application for all stains? How many different methods are there for applying each stain? These questions could go on and on. The same type of questions apply to lacquer, varnish, filler, air-drying enamel, force-dry enamel, synthetics, infrared, convection ovens, humidity, temperature, etc.

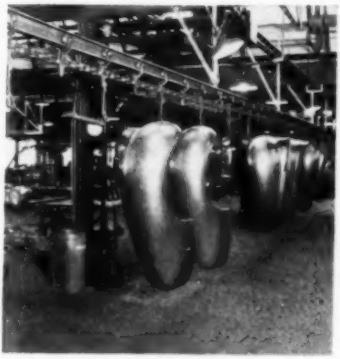
For a new man to learn these A, B, C's, he will need a teacher. Perhaps the best teacher would be a paint chemist. If I were you I would

PALMER-BEE CONVEYORS

for assembling, finishing or transporting any metal or wood product



Section of world's longest furniture conveyor.



Fender conveyor in automobile plant.

Regardless of the kind, size or weight of your product, Palmer-Bee will design a conveyor which will enable you to produce it more economically and with a better finish than is possible with manual methods of handling. The only requirement is sufficient volume to warrant the capital investment.

Automobiles, tractors, stoves, washing machines, wringers, ironers, vacuum cleaners, furniture, refrigerators, typewriters, electric motors, automotive parts and many other mass production products are today being manufactured faster and at lower cost largely because of P-B Conveyors.

How well these conveyors are designed and how ruggedly they are constructed is indicated by the fact that we are still receiving orders for replacement parts on installations made prior to 1920.

If you have a material handling problem, it will pay you to call in a P-B Engineer.

PALMER BEE COMPANY
DETROIT 12, MICH.

contact my supplier of industrial finishes and ask their help. I feel certain that they would be glad to assist in the training. They would probably suggest sending him to their laboratory for several days, possibly a week, to start this basic training.

Naturally in a week the student would not learn everything about industrial finishes. On the other hand if he is intelligent and the right type of person he might learn as much in a week as would take him five years to pick up himself, if he were thrown out on his own. You must not underestimate the value that one week's training in a paint laboratory would give him. If, for any reason, your supplier can't or won't assist you in this training, you can send him to me. I will be glad to help, free of charge, with the assurance that there won't be any obligation.

After this initial training in the paint laboratory, the next step is to learn how to apply various types of industrial finishes. A good finishing foreman can usually perform all of the finishing operations as good or better than anyone working under him. That is one of the reasons the others are working under him. A good finishing foreman must know and appreciate the working conditions and problems of those in his department. The best way to gain this knowledge and appreciation is to work in all of the departments sufficiently long, so as to become familiar with them. The different departments that are referred to are staining, filling, spraying, sanding, rubbing, baking, etc. Naturally, some of these are easier to learn than others. With the exception of the spraying, a week or less in each department should suffice.

In reference to learning the spraying technique, you are in luck. At least one of the spray equipment manufacturers (there may be more than one) that advertises regularly in this magazine conducts training schools in all phases of spray operations.

To the best of my knowledge this training is free but, of course, the student pays his own expenses. I have never had the opportunity to attend one of these schools (I intend to some day) but I have talked to others who have and they praise the instruction very highly. A complete period is not over two weeks. Probably one week would suffice.

The new finishing foreman should by all means receive regular issues of INDUSTRIAL FINISHING Magazine. It would be wise for him to get some back issues and read them. The information contained in this magazine is of non-technical nature and can be readily understood and put into practice.

There are also a number of books on finishing, and it would be wise to have several of these. One of these books, by R. H. Wampler on Organic Finishes, is particularly good. There are also others that are advertised in most every issue of INDUSTRIAL FINISHING Magazine.

Assuming that your prospective finishing foreman has good business sense and the ability to direct the work of others, I believe that the complete training program, as outlined above, which would take from four to six weeks, would be adequate.—RAYMOND C. ADAMS, Technical Director of Gilman Paint and Varnish Co.

Life of Silk Screen Stencils

We are about to produce metal awnings and we are contemplating printing stripes on them with silk screening. One deterrent feature is that we can get no accurate information as to the probable life of a silk screen. Some sources say all we can

(Continued on page 101)

expect is 1000 imprints per screen, while others say 40,000. Assuming that they receive average good care, what would you think are the minimum and maximum imprints of a screen when used to print stripes on our awnings? If you are unable to reply, could you direct us to an impartial source?—N. C. Mfg. Co.

You say that you want data on the life of a silk screen. The answer is from one copy to a million, from one screen. It can be so damaged by improper cleaning after running the first copy that it is useless. And if the squeegee is sharpened properly and the screen is handled carefully, being cleaned well after each use, there is no limit as to how many runs can be obtained. Of course, I am referring to a good silk such as the imported Swiss type.

On the life of the color (paint) this too depends on its quality and strength. The usual life is from three to five years, with a direct sun contact and even an ocean spray.

Should you have any problems on the silk screen or finishing end, I would be glad to be of service. You can secure my book "Silk Screen Methods of Reproduction" from INDUSTRIAL FINISHING.—Bert Zahn, Regional Director for T. J. Ronan Co.

Limed Oak or Walnut; Toasted Mahogany

We would be grateful if you would send us information on how to produce the following finishes on veneered furniture: Limed oak or walnut, and toasted mahogany. Also, what is a "smoked" finish.—A. & M.

Limed oak finish on oak wood is simple to obtain. Of course the wood must be as uniform and light in color as possible. This means that it must be carefully selected or it must be bleached. Careful selection is the better start, provided there is enough top grade lumber available for it to be practical. *The wood is wash-coated to hold the tone as light as possible. Then it is filled with a white filler, and the sealer and varnish or lacquer final coats are applied.*

Some finishers prefer to use a white lacquer enamel for wash coating, especially if the wood tends to be rather dark. The enamel is thinned to very low solids content, and just enough is applied to give a whitish cast to the wood. Too much will obscure the grain. After sanding, the wood is filled and coated. This method does not give the clear clean tone of white filler over very light wood.

The sealer and varnish or lacquer top coats should be of the colorless, water-white type.

Limed or frosted walnut on walnut wood is also produced by a comparatively simple system. Some finishers prefer to bleach the wood first, depending upon the color effect desired. The wood is wash-coated, either with very thin white lacquer, or with a clear material. Then it is sanded and filled with a white filler. The top coats are applied as in the limed oak systems.

Toasted mahogany finish on mahogany requires that the wood be bleached —or that the veneer be very light in color. The surface is wash-coated with a clear material of 5% to 10% solids content. Sometimes a little light brown non-grain-raising stain is added to the wash coat to give the finish a rich light undertone. A very light brown filler is used. Then the sealer and other top coats are applied.

One trick, sometimes used on low-priced merchandise, is to use ordinary veneer and wash-coat it with a very thin white lacquer enamel. This treatment gives the illusion of the wood

having been bleached, but the finish is not clear and rich. Then a brown filler is applied, as suggested previously.

While the finishes just described are pretty well standardized, the "smoked" finishes are not. Those I have seen varied widely, but all had a smoky haze below the surface. This effect may be obtained with certain types of wiping glazes, or by "fogging" on certain types of shading stains. Most shading stains are as transparent as they can be made, but for this purpose they should have some hiding or obscuring power in order to give the smoky haze. I suggest that you submit a sample panel of the color you want to your supplier and ask him to supply you with suitable finishing materials.—R. H. WAMPLER.

Again, Force-Dried Wood Finishes

By W. T. Smith

SEVERAL FACTORS, not the least of which may be postwar labor and material situations, have contributed to a return—if indeed it has ever been away—of the resinous or synthetic varnish type of force-dried finish for wood furniture and cabinet work.

Not a new idea—I recall of seeing them promoted with some vigor 20 years ago—these finishes are being shorn of some of their major objectionable features, partially by altered circumstances of potential users, and partially by actual improvement of the materials themselves.

One of the greatest objections to this type of finish for fabricated wood products has always been the necessity of subjecting the coated piece to a temperature of 140° to 150° F. for a period of at least one or two hours. The possible stresses induced in a carefully constructed article of several species of wood, laminated and solid, to say nothing of the effect on carefully controlled-moisture content in face veneers—all of these factors are quite well taken care of by curing the film in an atmosphere of not less than 40% to 50% relative humidity. Properly stress-balanced kiln-dried lumber will not be injured by exposure to such an atmosphere.

Complete equipment necessary to provide finish-curing facilities for the firm's output, under such conditions, is not a part of the conventional installation in an everage furniture factory. However, there are factories where installation of the necessary facilities will be justified, in order to use a system in which two coats (often requiring but a single force drying) can displace the conventional 3-coat lacquer system very effectively.

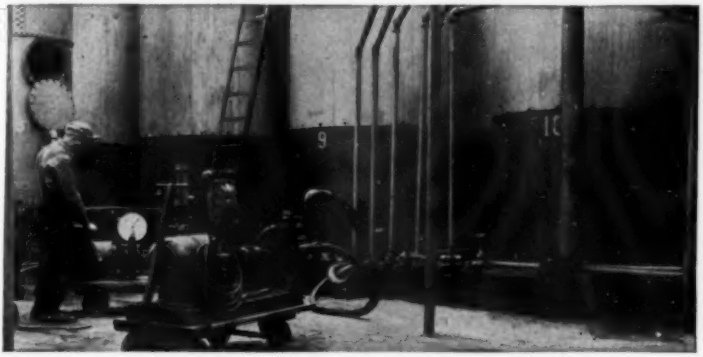
Two of the objections of these materials for production-line furniture finishing might be found in the traditional difficulty, or impossibility, of patching or spot repairing a place in the finish and rubbing it to a satisfactory surface texture by conventional methods. Both of these factors have been largely overcome. *Resinous materials are now on the market which can be spot patched like a lacquer—and they can be rubbed like a lacquered surface, and with the same materials.*

Austin Fletcher Joins Enthone, Inc.

Austin F. Fletcher has been appointed Sales Engineer for Enthone, Inc., 442 Elm St., New Haven, Conn. Mr. Fletcher will service central and western New York State including Binghamton, Syracuse and Rochester.

Mr. Fletcher has a wide acquaintance in the electroplating industry being an active member of the A.E.S. He was Vice President of the Newark Branch of the A.E.S. and was Supreme Vice President of the Society.

Mr. Fletcher will sell and service Enthone products for the metal finishing industry in his territory.



LACQUER THINNERS
OF
OUTSTANDING QUALITY

Custom-made to exact specifications for your particular requirements under our strict laboratory control.

●

Submit your thinner or solvents problems to us . . . for prompt and accurate advice. No obligation whatever is involved.

IN THE PORT OF PHILADELPHIA

GEORGE SENN, INC.

2200 E. WESTMORELAND STREET • PHILADELPHIA 34, PA., U. S. A.

Cable Address: SENCO, PHILADELPHIA

Flash-Baking Synthetics

According to a statement by Maas & Waldstein Co., 438 Riverside Ave., Newark 4, N. J., one of the company's most outstanding developments in industrial finishes, during 1947, was the flash-baking synthetic finish known as "Flashdur." The firm declares that it developed the finish in order to offer manufacturers of metal products a method of increasing production. In some cases, "Flashdur" is completely baked and out of the oven in 1½ seconds. This finish is used extensively on such products as lipstick cases, cigarette cases, instruments, lighters, and numerous other fine metal products.

Valuable Solvents Available

Hercules Dipentene and Solvenol, two specialty solvents for paints and varnishes, are again available in full supply, according to an announcement by Hercules Powder Co., Wilmington 99, Del.

Dipentene and Solvenol are powerful solvents for most natural and synthetic resins and polymerized oils used in oleoresinous finishes. Their slow initial rates of evaporation produce excellent flow and leveling properties—and consequent ease of brushing.

Both solvents are useful also in the formulation of quick-dry enamels and varnishes, where they promote a thorough drying. In addition they act as excellent wetting agents for pigments.

Dipentene No. 122 also will reduce sharply the tendency of paints and varnish to skin. Neither solvent has a deleterious effect on the color of varnish or enamel.

Hercules Dipentene No. 122 is a colorless liquid with a pleasant, lemon-like odor. It is obtained by fractionation from the oils extracted from pine wood. It has a narrower boiling range and a faster evaporation rate than Solvenol No. 1.

Hercules Solvenol No. 1 is a slightly more powerful solvent. It is also obtained from the oils extracted from pine wood and in general can be described as a modified dipentene.

Steel Surface Conditioners

Surbrite S and Surbrite H are developments of the Hanson—Van Winkle—Munning Co., Matawan, N. J. These products are again readily available. Surbrite S and Surbrite H belong to the class of compounds broadly classified as acid inhibitors, that is, compounds to be added to sulfuric acid and hydrochloric acid pickling solutions. However, since they have the additional property of wetting or lowering surface tension and the ability to cause the pickled steel to develop a bright, smut-free surface, they are designated as "steel surface conditioners."

1) They save steel in that only the scale is attacked to any great extent.

2) They save acid because the acid ordinarily used in attacking the steel is not consumed.

Additional merits are:

1) Reduction of hydrogen embrit-

NEW PERIOD
Production Finishes
BAKING ENAMELS
LACQUERS SHELLAC
ENAMELS FILLERS
SEALERS SUPPLIES
PRIMERS STAINS
SYNTHETICS VARNISHES
Make—
NEW PERIOD FINISHES
YOUR STANDARD OF QUALITY
AND SERVICE IN 1948
SEALERS—Provides excellent body, dries fast and sands easily.
LACQUERS—CLEAR & SEMI-GLOSS. Uniform and dependable—Suitable for coating almost any surface—Provides more coverage and unusual mileage. Cuts costs.
LACQUER ENAMELS—FLAT & GLOSS. Available in a wide variety of matched colors and shades. Widely used by leading manufacturers.
SYNTHETIC ENAMELS—A durable and trouble-free finish for fast production. Built to meet the most exacting production schedules.
FILLERS and STAINS—New Period has long been famous for its Fillers and Stains. Specially formulated for mass production use. Unequalled color-matching service.
Remember New Period Finishes for Quality and Service
NEW PERIOD Production Finishes
Manufacturers of Fine Production Finishes
NEW YORK WOODFINISHERS' Supply Co.
109 IMLAY STREET BROOKLYN

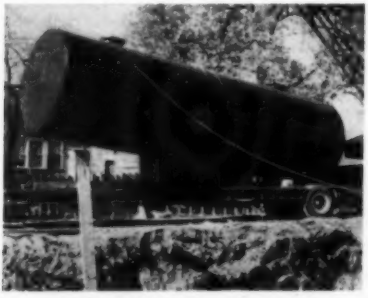
tlement, which occurs as the result of the hydrogen freed by the action of the acid on steel being absorbed by the steel during the pickling operation.

2) Decreased hazard because much less spray is produced inasmuch as the amount of hydrogen formed is small.

Surbrite S and Surbrite H are suitable not only for use in acid cleaning baths prior to metal finishing, but also for large scale pickling operations concerned with scale removal from hot rolled strip and steel forgings, stampings, and castings.

This material, when added to the pickle bath, will produce a foam which will blanket the solution and prevent the escape of spray from the bath.

Surbrite Foam is a dry powder which must be added daily to the pickling tank. The usual addition consists of 1 pint per 100 square feet of bath surface daily, but this, of course, will depend upon the amount and type of work being processed and should be modified by the pickle house foreman to suit his requirements.



Unloading one of four large tanks which now are placed side by side, underground, at the plant of V. J. Dolan & Co., Inc., Chicago, Ill. The four underground tanks provide the firm with 50,000 gallons of additional storage capacity for thinners and solvents.

Matches Car Colors for Refinishers

One of the Arco Company's major time-saving aids to simplify, speed-up and improve refinishing of cars and trucks was exhibited at the Automotive Service Industries Show at Chicago last December. The streamlined, motorized "Color Bar" introduces automatic rotoplane agitation for the economical precision mixing of lacquers and synthetic enamels to quickly match more than 4000 different standard automobile colors.

Both this compact, cabinet-enclosed unit, and the larger manually-operated Arco "Color Machine" displayed with it, use 16 basic colors from which it is possible to match, in three to five minutes, any of the colors used by automobile manufacturers since 1933. These units are products of The Arco Co. of Cleveland, Ohio, and Los Angeles, Calif.

Waterless Handy Cleaner

The waterless cleaner "Far" removes dirt, grease, grime, paint and other soiling agents without the use of water in cleaning or washing. Included in the formulation is refined lanolin for protecting the hands against chapping and chap cuts. The formula is absolutely safe and pure for all users including children. The major usage is reported to be in the existing demand market for mechanics, laborers, painters and other artisans, but it will clean woodwork, furniture, automobiles, porcelain, tile and other surfaces where dirt, discoloration and mold must be removed.

Exhaustive tests show that "Far" will not harden, turn rancid, or form mold upon standing open, in cans in dealers' shelves, or in the hands of users. Time does not bring liquification or any change in the cleansing properties, nor in the pure white

START

the New Year with a good FINISH

Our Creative Studio is ready to help send you through 1948 with flying colors. In fact... with *sales-appealing* colors that bring refreshing new beauty to your merchandise.

Our artists first study your product thoroughly... then develop the coating they believe to be most complementary to its fine lines and design. They do not rely on hit-and-miss methods to produce the color and texture desired.

Many progressive firms joined our ever-increasing list of satisfied customers in 1947... saw for themselves how effective our finishes really are.

May we be of the same service to you in 1948?

No Tampering with Quality

ROCKFORD VARNISH *Company*

ROCKFORD, ILLINOIS

Manufacturers of Protective and Decorative Coatings

color. There is only a mild, neutral odor to "Far", which disappears completely one minute after use, and no odor of ammonia, gasoline or perfume.

"Far" is packed in 14-oz., 3-lb. and 5-lb., standard lithographed cans, and in jumbo-size tubes. Larger size containers and dispensers, especially for industrial use, are available also. It is a product of Farbach Chemical Co., Cincinnati 23, Ohio.

Synthetic for Bleached Wood

With the current vogue for bleached wood finishes for furniture and interior construction the synthetic resin recently introduced by the Hercules Powder Co. under the name of "Cellolyn 95" is especially timely. The resin is also recommended for interior white pigmented metal lacquers and other lacquers where pale color is a factor.

Outstanding features listed for the new resin are its extremely pale initial color and color retention, which is claimed to be better than maleates and on a par with dammar and coconut oil alkyds, and its high alcohol resistance. It is self-plasticizing, has broad compatability with most of the common film-formers, and may be used with ordinary lacquer solvent and diluent combinations. For further information, write Hercules Powder Co., Wilmington 99, Del.

Polishing Bonnets, Discs and Mitts

Henderson & Austin, Inc., 308 Atlantic St., Stamford, Conn., announces its Red Dot trade-marked line of lambs-wool products—polishing bonnets and discs, waxers, polishing mitts, Lambsponge, chamois and other lambs-wool products.

Polishing bonnets and discs (for automatics) are tough and long-wearing, standing up under repeated wetting and drying, friction heat, and repeated cleaning without matting, cracking, distorting or hardening. Models are expertly cut, one-piece only, and strongly sewn with smooth rip-proof seams. All Red Dot bonnets and discs are oversize to assure a full fit and prevent cutting of bonnet by the machine disc.

Red Dot polishing mitts are large popular size, 9¼x6½-in., with special internal seam sewing for rip-proof long life, and with no edges or sharp seams to mar or scratch highly polished surfaces. Each mitt fits the hand snugly with heavy wristlet of knit elastic webbing. Used for fine polishing as well as heavy-duty washing or scrubbing. These mitts wash easily when soiled, retaining their original softness and freshness.

Interchemical Gage Quickly Reads Thickness of Wet Films

An outstanding feature of the 1947 Paint Industries Exposition was a new wet-film thickness gage introduced by Interchemical Corporation Finishes Division. Developed by Maynard E. Euverard of Interchemical Corporation, the gage is now being

This gage measures the thickness of a wet film of paint, quickly and accurately.

Randolph Flexible LACQUERS

ARE TOUGH, ADHESIVE . . . AND VERSATILE

Will withstand forming operations

•

Can be sprayed, dipped or baked

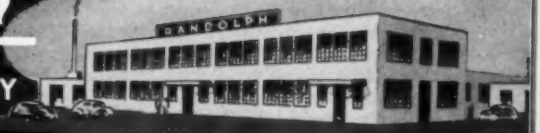
•

Available in clear and wide assortment of colors.

We will gladly submit technical information, or specifications for a Randolph Flexible Lacquer that will serve your particular requirements, on request. Use convenient coupon below for prompt reply.

Randolph

RODUCTS COMPANY
Carlstadt, New Jersey



DOPES • LACQUERS • ENAMELS

Randolph Products Company
Carlstadt, N. J.

..... Date

Gentlemen:

We are interested in having you submit ( ) samples, ( ) technical specifications, ( ) information for:

( ) Please have your representative call.

Firm name .....

Per .....

Address .....

L.F.

made available for general use by Henry A. Gardner Laboratory, Apparatus Division, Bethesda, Maryland.

In view of its accuracy (to within .0001-in.) the Interchemical gage is surprisingly convenient, quick and easy to use. The operator simply rolls the gage over the wet film and reads the thickness directly on the 0 to 4 mils calibrated scale engraved on the outer wheel of the instrument.

Other distinctive features of the Interchemical gage are its handy size, rugged high chrome, stainless steel construction, ease of cleaning and the facility with which film thickness measurements may be made on simple concave or convex surfaces.

In addition, a 0 to 2-mil gage is being developed to facilitate measurement of thin films with accuracy in the range of .00005-in.

Klem Metal Cleaner No. 159

Here is a new heavy-duty still and soak tank cleaner of the faster acting type, according to the manufacturer, Klem Chemicals, Inc., 14401 Lanson Ave., Dearborn, Mich. It is recommended for all types of heavy-duty cleaning of ferrous metals. Though it was developed chiefly as a general purpose cleaner, No. 159 has proven itself exceedingly valuable as a cleaner before galvanizing and porcelain enameling, as well as a soak cleaner before plating.

Cleaning procedure for soak or still tank requires a concentration of only 6-oz. of No. 159 to a gallon of water. Concentrations can be increased or decreased to 4-oz. or 8-oz. to the gallon, depending upon the speed required for the cleaning job to be done. Water temperatures should be held as near boiling as possible. Rinsing after cleaning is simple and frees the surface of all impurities, leaving it thoroughly clean for next operation.

Relative Humidity Indicator

A new quick-reading all-metal humidity indicator, designed for use in industry and laboratory, is announced by the Weston Electrical Instrument Corp., Newark, N. J. The Indicator

Dials are above and slide rule below.

provides readings of relative humidity accurate within 1% for general conditions.

The instrument is of wet and dry bulb type, featuring all-metal Weston Laboratory Thermometers, self-supporting wet-bulb wick covering the thermal element, sturdy all-metal construction, and a simplified Slide Rule Calculator giving relative humidity reading directly, thus eliminating the need for tables or psychrometric charts. The unit is light and well balanced, and can be swung if desired to create air movement. The only maintenance necessary is to change the wick occasionally and replenish the water in the reservoir, which is a heavy-walled, large-capacity jar, covered to reduce undue evaporation.

The Slide Rule Calculator, located

use

SPRAY BOOTH SHIELD

to cut cost... save time

1 SPRAY ON clean booth. That's all! Perfect protection against drift.

2 PEEL OFF sheets — not shreds! No more tedious scraping. Job's done!

If Time means money in your plant

. . . you will insist on using this "tailor made" peelable coating.

Spray Booth Shield is plastic-based, tough and free stripping.

It requires no special reducer . . . no special equipment and atomizes at normal pressures.

ORDER A TRIAL GALLON TODAY. We will bill you at DRUM price.

Immediate shipments F.O.B. Chicago.

RAMSELL PRODUCTS, INC.
Box 1422 — Des Moines, Iowa

Check These Advantages:

- √ *"Ready-to-use".*
- √ *Atomizes at normal pressures.*
- √ *Requires no special reducer.*
- √ *Needs no special equipment.*
- √ *Excellent coverage.*
- √ *Saves time . . . labor.*
- √ *Economical.*

Note: Specify Window Paint-Shield (Clear) for coating booth windows and light fixture openings. Does not impair lighting. Strips clean.

Ramsell Products, Inc.

DES MOINES 3, IOWA • AFFILIATED WITH PYROXYLIN PRODUCTS, INC., CHICAGO, ILLINOIS

on the face of the instrument directly beneath the two dial-face thermometers, indicates relative humidity from 10% to 100%. With one movement of the slide the proper setting is made according to the readings of the two thermometers, and the percent humidity is shown immediately on the upper scale. The instrument requires no calibration.

Buffing Compounds

The new Hydro-Buff "500" series of buffing compounds recently announced to the finishing trade by the Hydro Chemical Co., Inc., 24 Clark St., East Hartford, Conn., offers unusual possibilities for decreasing buffing operational time on both ferrous and non-ferrous metals. It is claimed by the manufacturer that by using Hydro-Buff buffing compounds, cleaning time of pieces is cut to 30 to 45 seconds. The "500" series of compounds constitute no fire hazard since they are non-inflammable and are soluble in all proportions in the chlorinated hydrocarbons.

Hydro-Buff is extremely well suited for plants equipped for vapor-phase degreasing operations and is also readily removed in the water-phase cleaning cycle. The retention of Hydro-Buff on buffing wheels is good; it cuts and colors in the same operation, eliminating the need for rouge; and the film remaining on the piece, before cleaning, will protect against oxidation and staining for a long time.

The Anonizing Process for Aluminum

It is often desirable to protect aluminum surfaces without changing the natural aluminum color. According to the Technical Processes Division of Colonial Alloys Co., Philadelphia 29, Penna., the Anonizing Process is a simple immersion method of protecting aluminum surfaces and yet maintaining their natural color. Aluminum that has been etched or mechanically or electrolytically or chemically polished, as well as aluminum as it comes from the mill, can be treated by this process without noticeably changing its appearance.

The coating is compact, protective and transparent. Salt spray tests on these coatings, on the common aluminum alloys, have passed 250 hours (the Army and Navy requirement for anodized aluminum).

Anonized coatings have good abrasion resistance and are resistant to smudging, oxidizing, finger-marks, ordinary handling and high temperatures.

The process consists of immersing the cleaned aluminum into the hot Anonizing solution for a few seconds to a few minutes, then rinsing. The equipment can be ordinary steel and many items can be handled in baskets.

Heavy-Duty Portable Vacuum Cleaner

A new, all-purpose, industrial "Tank Type" Cleaner for general vacuum cleaning, dust collecting and water pick-up is announced by Ideal Industries, Inc., 2030 Park Avenue, Sycamore, Ill.

Modern design, rugged construction, easy operation and power to spare are all combined in this new "Tank Type" Cleaner. Air filters are enclosed. The Ideal does not have an external bag to get in the way; instead it has a unique filtering system which is entirely self-contained. Incoming air is whirled around inside the tank and heavy particles are deposited there. The air then passes through a cloth bag filter where the dust is removed. Collected dirt is easily emptied from the cleaner by simply raising the vacumm sealed

Mac's

FASHION FINISHES

LACQUERS

Available in clear and opaque, for application to surfaces of all kinds. Spread easily and give good coverage. Any sheen desirable. Attractive, outstanding finishes.

SEALERS

Ideally suited as first coat materials under clear gloss or flat lacquers. Give good body and sand easily. Also, work well under varnish and enamel! Try them!

VARNISHES

None better! Whether for dull, satin or gloss effects, Mac's varnishes will be found most economical and appropriate as finishing coats on low, medium and high priced goods.

STAINS

These are stains of distinction, with an established reputation for the highest quality. We've been making them since 1875. Mac's stains can be supplied for every need.

FILLERS

The Mac's Fashion line includes the more commonly used oil paste fillers as well as the quicker drying materials of recent development. Keep abreast of the times with Mac's fillers.

PRIMERS

Mac's Fashion primers insure full coverage and absolute protection as first coaters on metal, forming firm and lasting foundations on products subject to severe treatment and abuse.

ENAMELS

For wood, metal and other surfaces, air dry or bake. Mac's Fashion enamels, properly applied, stand up under all conditions to which painted articles are subjected.

WOOD BLEACH

Mac's Fashion bleach will bleach all kinds of wood including mahogany. Dries overnight to a definite bleached effect ready to sand, and ready for the regular finishing schedule. Samples on request.

THE LAWRENCE-McFADDEN CO.

Write for Production Test Samples

7430 STATE ROAD PHILADELPHIA 36, PA.

Headquarters for Fine Finishes Since 1875

The **DUST-ALL**
TACK RAG
Collects Dust and Dirt Too!

DUST settles on surfaces and unsatisfactory finishes result. The *Dust-All* Tack Rag collects Dust. It is the quick economical means to assure good finishes.

Get the *Dust-All* Tack Rag in the Red Checkered Bag at your Dealers or write us.

HARDING
MANUFACTURING CO.
10606 Gratiot Ave., Detroit 13, Mich.

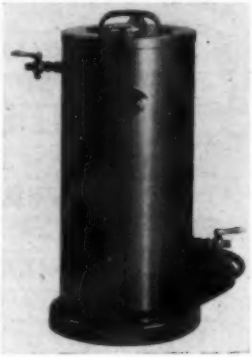
lid and then lifting out the 9-gallon tank and dust bag.

A 1 1/3-hp. continuous duty motor provides ample power without overheating. Construction is of 16-gauge steel with smooth Hammerloid finish.

Thins Paint Materials by Heating Them

The Trirex Paint Heater takes advantage of a basic law of nature—heating paint to reduce its viscosity and thinning it out so much that it becomes more easy to apply by spraying, flow coating, dipping or roller coating. The heater is installed between the pressure tank and the spray gun and will heat the paint, varnish or lacquer to any desired temperature, usually 180° to 200° F.

By such electric thermal control, at elevated temperatures, you reduce the need for adding thinners, and atomization is accomplished easily and



thoroughly. The atomized material flows out to a nice smooth glossy film.

The Trirex paint heater is applicable to all types of finishes—lacquers, synthetics, baking enamels, wrinkles, etc. It is heated electrically. A product of Bede Products, Inc. 3309 W. 118th St., Cleveland 11, Ohio.

Play Safe . . . . . Use NAZ-DAR SUPPLIES

★ You have no regrets when you use NAZ-DAR QUALITY Silk Screen materials and supplies.

For a quarter of a century we have been headquarters for everything connected with the Silk Screen industry, building up an enviable reputation for fine quality merchandise and reliable service.

We make the famous YELLOW LABEL and BLUE LABEL Process Colors, WEATHERPROOF Silk Screen Enamel, Silk Screen Lacquer and many other products. Our line includes Decalcomania Paper, Frames, Squeegees, Cutters, etc.

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CEL-U-LAK
LACQUERS and ENAMELS

FORM-A-ROC
ALKYD-AMINE ENAMELS

Also . . .

Bronzing vehicles, adhesives and other specialties for the industrial finishing of wood, metal, ceramics and plastics.

5204 HARVARD AVENUE, CLEVELAND, OHIO

Industrial FINISHING Editorial

Improved Finishes to Be Available in '48

★ During 1948 we can be sure of more extended usage, improvements, etc., of those newer finishes produced last year. Two or three of them are noteworthy in the class of bake-finishes, because they are altogether unlike the orthodox coating materials regularly utilized.

The lesser of these new resins are polymolecular products derived from styrene, possessing a combination of properties valuable in many types of coatings, plastic compositions, and adhesives. They are chemically inert, and are heat and light stable. Their unique properties include water-white color and resistance to alcohols and chemicals. They are used in textile coatings, paper lacquers, adhesives and in the conventional paints, varnishes and lacquers.

Next, acrylic ester resins are a comparatively recent development in the class of synthetic resins available for industrial use. These resins are thermo-plastic, and films are formed from their solutions by solvent evaporation. As a group, these resins possess the following distinctive characteristics: Water-white color; perfect transparency; resistance to water, alcohol, alkali and acids, and chemical fumes; exceptional resistance to mineral and vegetable oils; great flexibility and adhesion; good electrical properties, and high resistance to burning.

Then, there is the silicon-oxygen group of very special resins, possessing a combination of protective properties not inherent in any other type. They have exceptional resistance to heat, cold and moisture; they are more weatherproof than organic resins because they are unusually water repellent; and they are resistant to both oxidation and ultra-violet rays. They are resistant to most chemical fumes, and to attack by dilute and concentrated acids, alkalies, salts and oils. These very useful properties are inherent in their chemical structure.

Built on a singularly stable molecular skeleton, they retain much of the inertness and heat-stability characteristic of quartz and glass, to which they are chemically related. They acquire flexibility and ease of handling. Their properties lie between those of the better organic finishes and vitrified enamels; white enamels made with this resin are absolutely non-yellowing and non-chalking at 500° F.—X.Z.

★ *Guest Editorial . . . Many readers can write an excellent editorial—two or three paragraphs that present a timely suggestion or valuable idea which will stimulate thought on a live subject. The Editor welcomes guest editorials, paying for those published.*

What's Really New in Finishing Materials

★ Although raw materials are more available than they were a year or two ago, rapid shifts in prices and availability of some things have brought about swift changes overnight. Management must be on its toes constantly, and technicians must anticipate some changes. *(To p. 120)*

A step in the right direction . . .

PRATT & LAMBERT-INC.

Industrial Finishes

NEW YORK BUFFALO CHICAGO

FORT ERIE, ONT.

The Original

Anti-Silking Anti-Flooding Agent

Will improve your

DIPPING ENAMELS
SPRAYING ENAMELS
METALLIC ENAMELS

See the improvement in your own paints.

Samples and literature on request.

Paint Chemicals Inc.
77 West Washington Street
CHICAGO 2, ILL.

Some new raw materials are coming into the market, and some items that formerly were too expensive to use are today cheaper than the conventional materials. The net result has been that paint technologists have had to be more alert and have been required to move faster than at any time in recent years.

Quality standards have not suffered as a result of this movement. In many cases new and better materials have become available which actually saved the consumer of finishing materials considerable money. In many cases better quality went along with these changes.

As for technological advancement, several things might be mentioned, among them being:

1) Better lacquers are available today than at any time in the past.

2) New alkyds based on comparatively new polyhydric alcohols have brought about important improvements.

3) Better utilization of industrial by-products formerly thrown away have resulted in valuable new raw materials for paints.

4) Intensive study of drying oils has brought about great improvements. Drying oils, instead of being regarded solely as raw materials for finishes, have become raw materials that are starting points for processes which result in highly specialized raw materials for the organic finishes industry.

5) New and faster-drying materials for consumers of industrial finishes are constantly coming on the market. Some overthrow conventional ideas about drying, but they work in spite of it.

6) Electronic aids in finishing have found ever-increasing application.

To detail any of the new developments would require too much space. I have tried to condense my ideas in

(Continued on page 123)

the above general remarks without being too general. Anyway, things seem to be moving faster in paint technology.—ROLLIN H. WAMPLER.

Expect and Look for Something New

It has been said of widely traveled persons, that after a time they know beforehand just what they will find when they get there. They have all of the answers. That comes from experience. And they generally find just what they expected—and seldom more. They have a closed mind, yet if anyone accused them of being in such a state, that person would be considered lacking in good sense.

There is a parallel in industry. Going to the factory each day becomes a habit. Those who go there are experienced whether they are laborers or executives. They know ahead of time what they will find—the usual ups and downs, and seldom more. But like the traveler, there is far more than meets the casual eye. There are new and better ways of doing the job. Those ways will never be found with a closed mind.

More High-Solids Coatings to Be Used

★ The trend through 1947, for wood finishing, will undoubtedly continue on through 1948. The use of high-solids materials — sealers and top coats necessitating only one coat of each for an adequate finish—have become popular and will probably continue as the choice of wood finishers.

The newest high-solids wood sealers have been formulated to seal practically all types of wood with one spray coat application. This type of sealer sands rapidly and with great ease. The high-solids topcoats like-

The Protective Finish with
POSITIVE ADHESION
to really "TOUGH" METALS

Strathmore
METALBOND
clear

for Spray or Dip Application

Here at last is the formulation with 100% adhesion qualities to the really tough surfaces: lead, brass, copper, aluminum, zinc, galvanize, magnesium and others. Air dries in 15 minutes. Force drying allows film to achieve maximum resistance more quickly. Tried and proven by manufacturers with knotty problems where "something better" had to be found. (Nationally known Quick Freezers, Milk Coolers, Safes, etc.) May be mixed with aluminum bronze for a beautiful silver finish.

IDEAL PROTECTIVE FINISH

Withstands extended immersion in water. Extremely resistant to alkali, dilute acids, soaps, solvents, etc.

Order 5 Gal. TODAY
at the
DRUM PRICE

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See page 6 for list of representatives!

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Syracuse 4, New York

Beautify

your product with WOOD - GRAIN Finish

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American Graining Plates are photographic reproductions of fine woods.

AMERICAN RICHWOOD PRODUCTS CO.

Graining Plate Division

104 E. Mason St., Milwaukee 2, Wis.

EVERYTHING FOR INDUSTRIAL FINISHERS

• LACQUERS • ENAMELS
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SAME DAY SERVICE

MORRIS
Paint & Varnish Co.
1823 Washington St. Louis 3, Mo. — 1510 Capitol Omaha 2, Nebr.

wise are formulated to produce a full-bodied finish with one spray coat application.

New solvents that have become available, due to recent developments, permit this type of coating to be formulated.

Lacquer thinners are tending to become standardized, thereby permitting the use of one thinner generally for the reduction of practically all types of lacquers.

This finishing schedule, using the high-solids wood coatings with better solvency lacquer thinners, permits the speeding up of wood finishing as well as allowing a reduction in the amount of costly equipment and space that has been needed in the past for the many-coat types of wood finishing.—SEYMOUR WATTENBERG.

Random Comment on the Industrial Scene

(Continued from page 11)

"The most effective way to bring about such accident-less days," Mr. Hodges asserted, "is to make every man, woman and child realize the costs of accidents in terms of human lives, painful injuries and dollars. Show them how and why accidents happen and teach them what they must do to prevent or avoid these tragic occurrences which annually drain off so much of our national wealth."

* * *

Metallic Chrome Lacquer. At the recent meeting of the Lacquer Committee of the National Paint, Varnish & Lacquer Association, announcement was made by Henry E. Lackey, Industrial Sales Manager of Finishes Division of E. I. duPont deNemours and Co., that they (The DuPont Co.) will, on application, issue a license to any manufacturer in this industry

£

STERLING

Complete Finishing Systems

Primers...Thinners
Clear and Synthetic Enamels
Ready-mixed Metallic Lacquers

3508 Market St. **STERLING LACQUER MFG. CO.** St. Louis 3, Mo.

Just Published

INDUSTRIAL APPLICATIONS OF INFRARED

By James D. Hall, Advisory Engineer, Westinghouse Electric Corporation. 198 *pages*, 140 *illustrations*, $3.50. This new book shows you how to employ infrared radiation for better and more economical surface-finishing—for paint drying, metalworking, wood finishing, foundry molds, and for many other industrial heating processes. It describes what equipment is available, how it operates, and where to use it. Here is a thorough, easy-to-understand guide-book on modern heating technique.

INDUSTRIAL FINISHING
1142 N. Meridian St., Indianapolis 4, Ind.

UNISOL
PAINT STRIPPER

A New Development for Industrial Paint Stripping

- Non Inflammable
- Used Cold
- Works Rapidly on All Types of Finishes.
- Non Injurious to Hands.
- Unisol Liquid—For Dipping, Dries Rapidly With no After Film to Interfere With Repainting.

Samples and further information supplied on request.

Chemco Products Co.
Incorporated
1059 East 76th Street
Chicago 19, Illinois

who wishes to produce Metallic-chrome lacquers, without any charge or fee to the producer or consumer, for the manufacture or the use of Metallic-chrome. U. S. patent numbers 2,335,760 and 2,140,745 cover the manufacture and sale of Metallic-chrome lacquers. The Lacquer Committee expressed its high appreciation of the service rendered and so freely made available to the paint, varnish and lacquer industry by DuPont Co.

BLANCHIT
(Trade-Mark Reg.)
U. S. and Foreign Patents
WOOD BLEACH
Accepted Standard
For Furniture and Cabinet Makers
Also Interior Woodwork Recoloring
L. R. van Allen Co.
Patent Licensee
CHICAGO 54

"WOOD DOUGH"
(The Original)
Now available in *Paste* or *Dry* Form. Quickly corrects defects in wood products of all kinds. Ask for free samples.
O. R. PLATTER
Dept. S. North Vernon, Ind.

Amberlight Colors. Amberlight is a new family of colors introduced recently at a fashion show presented by The New York Times. Rene Carillo, stylist is of the opinion these colors will play an important role in home decorating. Variations of amber range from pale gold, through orange to deep reddish brown.

Mr. Carillo states that home furnishing colors generally follow apparel colors in about two years. This is a comparatively short time for designers to get ready for a change, should the trend follow through.

* * *

Synthetic Fabric. A new yarn made up of synthetic fibers is being used in the manufacture of automobile seat covering fabrics. It is said to be fire resistant and immune to grease, oil and mild acids. Manufacture of the yarn is contemplated in England, Australia and the United States.

* * *

Electrically Conductive Glass. A practical use for glass that conducts electricity is in the control cabins of higher altitude planes. A transparent vinyl plastic coating is laminated between two pieces of glass. The coating is a conductor, and electric current passed through it produces regulated heat to melt the ice and dissipate fog.

This should work very well in automobile wind shields and prove valuable in certain industrial processes where condensation of steam causes poor visibility.

THE MISKELLA *Infra-Red* COMPANY
Pioneer Manufacturers of
INFRA-RED OVENS · APPLIANCES · SECTIONAL UNITS · MACHINES AND CONVEYORS
TELEPHONE: HENDERSON 2010
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MAIN OFFICE AND LABORATORY
EAST 55TH AND GRAND AVENUE
CLEVELAND 4, OHIO

Fluorescent Treated Materials such as satins of acetate and nylon, wood and metal products painted with fluorescent paint, all of which glow under a "black light" were introduced recently at a showing in New York. This may be the beginning of a popular trend in decoration, lighting and display advertising.

To give you two examples, one was a fabric mural with a dramatic painting of flamingos against a deep blue pool. Under black lighting the bright colors gave a 3-dimensional effect.

A china cabinet with shelves painted with fluorescent paint had a small black light concealed inside which, when turned on caused the shelves only to glow. The soft light enhanced the beauty of old china and fine silver.

There is practically no limit to the use of fluorescence in store and show window displays. Bright colors glow around featured merchandise, but there is no visible source of light. For unusual Christmas decorations, trees as well as display pieces may be sprayed with fluorescent paint in colors; then all are illuminated by black light.

* * *

Valuable Wax Here. According to the Bureau of Mines, the United States, prior to the late war, annually imported 8,000,000-lbs. of high-melting point wax known as Montan wax from the German province of Saxony. It was used for insulation of electrical wiring, phonograph records, shoe polish and floor wax.

The bureau has found that a substitute wax may be obtained from Arkansas and California lignites which are softer than bituminous coal. It is said that an ample supply is available.

This is another shining example of why we need trained research men capable of unraveling Nature's secrets.

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Increases Its Business by 47% Over 1946

The Midland Industrial Finishes Co., Waukegan, Ill., announces that a 47% increase in sales over 1946 has necessitated general expansion plans.

Mr. M. A. Glaser, Technical Director, announces the promotion of Mr. Edward Miller to Chief Chemist of the company's laboratories. Mr. Miller will be in charge of development and research work in the lacquer, synthetic and specialty fields.

Mr. Edward J. Bromstead has been promoted to Group Leader and will be in charge of the development and formulation of products from the metal decorating laboratory.

The company has increased its representation in sales by several additions to its force. It has also made improvements in plant facilities with new mills and other processing equipment.

Edw. J. Bromstead and Edward Miller

Daniel Derogee Sr., to Represent American Varnish in Indiana

The American Varnish Co. of Chicago has appointed Mr. Daniel Derogee, Sr., as sales representative for the state of Indiana. Mr. Derogee is a resident of Grand Rapids, Mich., where for the past six years he has been connected with both the furniture industry and retail sales. This wide experience qualifies Mr. Derogee to be of valuable assistance in solving finishing and retail merchandising problems.

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